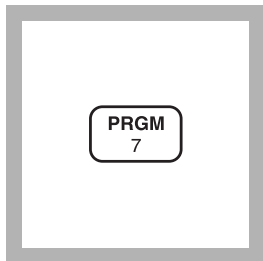


OXYGEN, DISSOLVED, Low Range (0 to 1000 $\mu\text{g/L O}_2$) For boiler feedwater**Indigo Carmine Method (Using AccuVac Ampuls)**

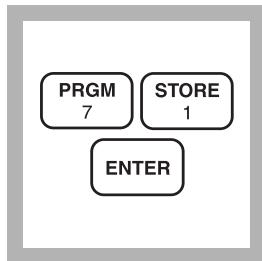
1. Enter the stored program number for low range dissolved oxygen (O_2).

Press: **PRGM**

The display will show:

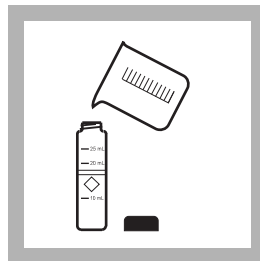
PRGM ?

Note: For most accurate results, perform a Reagent Blank Correction using deionized water (see Section 1).



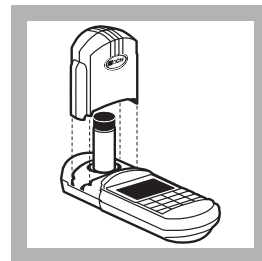
2. Press: **71 ENTER**

The display will show **$\mu\text{g/L, O}_2$** and the **ZERO** icon.

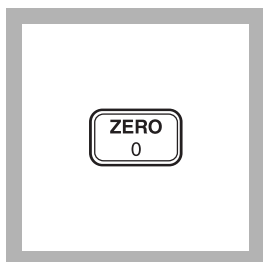


3. Fill a sample cell with at least 10 mL of sample (the blank).

Note: Samples must be analyzed immediately and cannot be stored.



4. Place the blank into the cell holder. Tightly cover the sample cell with the instrument cap.

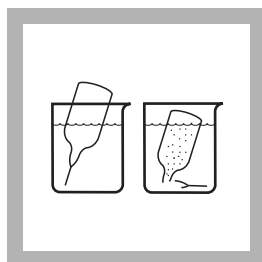


5. Press: **ZERO**

The cursor will move to the right, then the display will show:

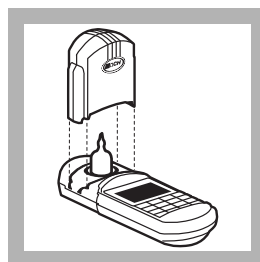
0 $\mu\text{g/L O}_2$

Note: If Reagent Blank Correction is on, the display may flash "limit". See Section 1.



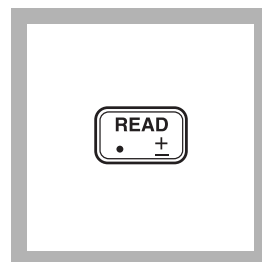
6. Collect at least 40 mL of sample in a 50-mL beaker. Fill a Low Range Dissolved Oxygen AccuVac Ampul with sample.

Note: Keep the tip immersed while the ampul fills completely.



7. Immediately place the AccuVac ampul into the cell holder. Tightly cover the ampul with the instrument cap.

Note: The ampuls will contain a small piece of wire to maintain reagent quality. The solution color will be yellow.



8. Press: **READ**

The cursor will move to the right, then the result in $\mu\text{g/L}$ dissolved oxygen will be displayed.

Note: Use the initial reading. The reading is stable for 30 seconds. After 30 seconds, the ampul solution will absorb oxygen from the air.

Sampling and Storage

The main consideration in this procedure is to prevent contaminating the sample with atmospheric oxygen. Sampling from a stream of water that is hard plumbed to the sample source is ideal. Use a funnel to maintain a continual flow of sample and yet collect enough sample to immerse the ampul. It is important not to introduce air in place of the sample. Rubber tubing, if used, will introduce unacceptable amounts of oxygen into the sample unless the length of tubing is minimized and the flow rate is maximized. Flush the sampling system with sample for at least 5 minutes.

Accuracy Check

The reagent blank for this test can be checked by following these steps:

- a) Fill a 50-mL beaker with sample and add approximately 50 mg sodium hydrosulfite.
- b) Immerse the tip of a Low Range Dissolved Oxygen AccuVac Ampul in the sample and break the tip. Keep the tip immersed while the ampul fills completely.
- c) Determine the dissolved oxygen concentration according to the preceding procedure. The result should be $0 \pm 1 \mu\text{g/L}$.

Method Performance

Precision

In a single laboratory, using a standard solution of $500 \mu\text{g/L O}_2$ and two representative lots of reagent with the instrument, a single operator obtained a standard deviation of $\pm 2 \mu\text{g/L O}_2$. For more information on Hach's precision statement, see *Section 1*.

Estimated Detection Limit

The estimated detection limit for program #71 is $10 \mu\text{g/L O}_2$. For more information on the estimated detection limit, see *Section 1*.

OXYGEN, DISSOLVED, Low Range, continued

Interferences

Interfering Substance	Interference Levels and Treatments
Hydrazine	100,000 fold excess will begin to reduce the oxidized form of the indicator solution.
Sodium hydrosulfite	Reduces the oxidized form of the indicator solution and will cause a significant interference.

Excess amounts of sodium thioglycolate, sodium ascorbate, sodium ascorbate + sodium sulfite, sodium ascorbate + cupric sulfate, sodium nitrite, sodium sulfite, sodium thiosulfate, and hydroquinone do not cause significant interference.

Summary of Method

When the vacuum-sealed AccuVac ampul is broken open in a sample containing dissolved oxygen, the yellow reagent solution turns blue. The blue color is proportional to the dissolved oxygen concentration.

REQUIRED REAGENTS & APPARATUS

Description	Quantity Required		Unit	Cat. No.
	Per Test			
Low Range Dissolved Oxygen AccuVac Ampuls...	1 ampul.....	25/pkg	25010-25	
Beaker, 50 mL	1	each	500-41H	
Sample Cell, 10-20-25 mL, w/cap	1	6/pkg	24019-06	

OPTIONAL REAGENTS AND APPARATUS

AccuVac Snapper Kit	each	24052-00
Sodium Hydrosulfite, technical grade	500 g	294-34

For Technical Assistance, Price and Ordering

In the U.S.A.—Call 800-227-4224

Outside the U.S.A.—Contact the Hach office or distributor serving you.