



## DISSOLVED OXYGEN TEST KIT

**CODE 5860**

For determining the dissolved oxygen content of water, this test kit uses the azide modification of the Winkler Method and employs a LaMotte Direct Reading Titrator in the final titration.

QUANTITY	CONTENTS	CODE
30 mL	*Manganous Sulfate Solution	*4167-G
30 mL	*Alkaline Potassium Iodide Azide	*7166-G
30 mL	*Sulfuric Acid, 1:1	*6141WT-G
60 mL	*Sodium Thiosulfate, 0.025N	*4169-H
30 mL	Starch Indicator Solution	4170WT-G
1	Direct Reading Titrator, 0 - 10	0377
1	Titration Tube, 20 mL, w/cap	0299
1	Bottle, Water Sampling, 60 mL, glass	0688-DO

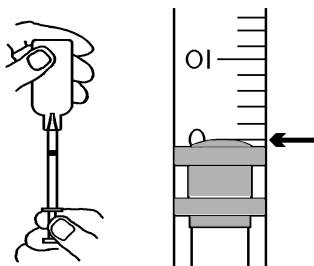
**\*WARNING:** Reagents marked with a \* are considered hazardous substances. Material Safety Data Sheets (MSDS) are supplied for these reagents. For your safety, read label and accompanying MSDS before using.

To order individual reagents or test kit components, use the specified code number.

**NOTE:** A Check Standard is needed to perform an “EPA Accepted” test.

### DIRECT READING TITRATOR INSTRUCTIONS

1. Fill the titration tube to 20 mL line with sample water.
2. Add the reagents as specified in the test procedure. Cap the tube with the special titration tube cap. Mix by swirling gently.
3. Depress the plunger of the Titrator to expel air.
4. Insert the Titrator into the plastic fitting of the titrating solution bottle.

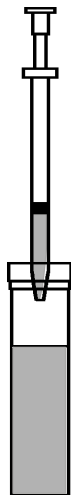


5. To fill the Titrator invert the bottle and slowly withdraw the plunger until the bottom of the plunger is opposite the zero mark on the scale.

**NOTE:** A small air bubble may appear in the Titrator barrel. Expel the bubble by partially filling the barrel and pumping the titrating solution back into the inverted reagent container. Repeat this pumping action until the bubble disappears.

6. Turn the bottle right-side-up and remove the Titrator.
7. Insert the tip of the Titrator into the opening of the titration tube cap. Slowly depress the plunger to dispense the titrating solution. Gently swirl tube to mix. A slight rotating or twisting motion may permit the plunger to move more smoothly.
8. Continue adding the titrating solution until the specified color change occurs. If no color change occurs by the time the plunger tip reaches the bottom of the scale, refill the Titrator to the zero mark. Continue the titration. Include both titration amounts in the final test result.
9. Read the test result directly from the scale opposite the bottom of the plunger tip.
10. If no additional tests are to be made, discard the titrating solution in the Titrator. Thoroughly rinse the Titrator and the titration tube.

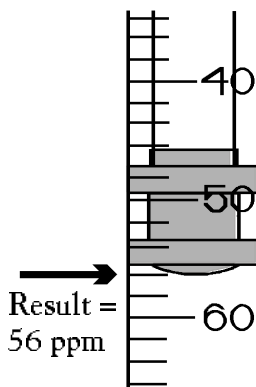
**NOTE:** The plunger tip should periodically be coated with silicon grease.



## COLLECTION & TREATMENT OF THE WATER SAMPLE

Steps 1 through 4 below describe proper sampling technique in shallow water. For sample collection at depths beyond arm's reach, special water sampling apparatus is required (e.g., the LaMotte Water Sampling Chamber, Code 1060; Model JT-1 Water Samplers, Code 1077; Water Sampling Outfit, Code 3103; or Code 3-0026 Water Sampling Bottle).

1. To avoid contamination, thoroughly rinse the Water Sampling Bottle (0688-DO) with sample water.
2. Tightly cap the bottle and submerge to the desired depth. Remove cap and allow the bottle to fill.
3. Tap the sides of the submerged bottle to dislodge any air bubbles clinging to the inside. Replace cap while the bottle is still submerged.
4. Retrieve bottle and examine it carefully to make sure that no air bubbles are trapped inside. Once a satisfactory sample has been collected, proceed immediately with Steps 5 & 6 to "fix" the sample.



**NOTE:** Be careful not to introduce air into the sample while adding the reagents in Steps 5 & 6. Simply drop the reagents into sample. Cap carefully, and mix gently.

5. Add 8 drops of \*Manganous Sulfate Solution (4167) and 8 drops of \*Alkaline Potassium Iodide Azide (7166). Cap and mix by inverting several times. A precipitate will form. Allow the precipitate to settle below the shoulder of the bottle before proceeding.
6. Add 8 drops of \*Sulfuric Acid, 1:1 (6141WT). Cap and gently mix until the precipitate has dissolved. A clear-yellow to brown-orange color will develop, depending on the oxygen content of the sample.

**NOTE:** Following the completion of Step 6, contact between the water sample and the atmosphere will not affect the test result. Once the sample has been "fixed" in this manner, it is not necessary to perform the actual test procedure immediately. Thus, several samples can be collected and "fixed" in the field, and then carried back to a testing station or laboratory where the test procedure is to be performed.

## TEST PROCEDURE

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1. Fill the titration tube (0299) to the 20 mL line with the “fixed” sample and cap.
2. Fill the Direct Reading Titrator (0377) with \*Sodium Thiosulfate, 0.025N (4169). Insert the Titrator into the center hole of the titration tube cap. While gently swirling the tube, slowly press the plunger to titrate until the yellow-brown color is reduced to a very faint yellow.  
**NOTE:** If the color of the “fixed” sample is already a very faint yellow, skip to Step 3.
3. Remove the Titrator and cap. Be careful not to disturb the Titrator plunger, as the titration begun in Step 2 will be continued in Step 4. Add 8 drops of Starch Indicator Solution (4170WT). Sample should turn blue.
4. Replace the cap and Titrator. Continue titrating until the blue color just disappears. Read the test result where the plunger tip meets the scale. Record as ppm dissolved oxygen.

**NOTE:** Each minor division on the Titrator scale equals 0.2 ppm.

**NOTE:** If the plunger tip reaches the bottom line on the Titrator scale (10 ppm) before the endpoint color change occurs, refill the Titrator and continue the titration. When recording the test result, be sure to include the value of the original amount of reagent dispensed (10 ppm).

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