

# DISSOLVED OXYGEN 15

## TEST FOR DISSOLVED OXYGEN IN NATURAL WATER

### Photometer Method

### AUTOMATIC WAVELENGTH SELECTION

0 – 15 mg/l

Natural water contains oxygen dissolved from the atmosphere. The presence of oxygen is essential to sustain aquatic life and to prevent the water from stagnation. The extent to which oxygen from the air dissolves in water is determined largely by the water temperature. The solubility is approximately 14.6 mg/l at 0°C, 11.3 mg/l at 10°C, 9.1 mg/l at 20°C and 7.6 mg/l at 30°C. In saline waters, the solubility of oxygen from the air is lower.

Dissolved oxygen is easily lost from the water through pollution or through high temperature conditions during summer months. Water in reservoirs and lakes may therefore be aerated by vigorous agitation in order to prevent stagnation. In extreme cases, oxygen may be directly injected into rivers or lakes in order to preserve aquatic life.

The DO/20 tests provide a simple means of testing for dissolved oxygen in natural or other waters over the range 0 - 20.0 mg/l or 0 – 15 .0 mg/l depending on the photometer used.

### Method

Special techniques must be employed when testing for dissolved oxygen as the water sample can be readily contaminated by the oxygen in the air. CHEMetrics Vacu-Vials self-filling reagent ampoules provide the ideal means of carrying out this test. The tip of the ampoule is dipped into the water sample and is then broken to allow the vial to fill with water. In this way there is no possibility of contamination from the air.

The Vacu-Vial DO/20 test uses a reagent based on the indigo carmine method. Indigo carmine, reacts with dissolved oxygen under the conditions of the test to form a blue complex. The intensity of the colours formed in the test is proportional to the dissolved oxygen content of the water and is measured using a Palintest Photometer.

### Reagents and Equipment

CHEMetrics Vacu-Vial Reagent Set DO/20

Palintest Automatic Wavelength Selection Photometer

DO test reagents are light sensitive. Store tubes in original containers and keep the box closed when not in use.

## Test Procedure

Read the Oxygen test instructions leaflet contained in the CHEMetrics Vacu-Vials pack. Observe these various recommendations regarding sample handling and use of Vacu-Vials.

- 1 Carry out the test in accordance with the test procedure given in the CHEMetrics instruction leaflet. Observe the time periods given in the test instructions.
- 2 Select Phot 75 on the photometer.
- 3 Use the colourless blank ampoule provided in the Starter Pack as the blank for setting the instrument.
- 4 Take the photometer reading (see Photometer instructions).
- 5 The result is displayed as mg/l O<sub>2</sub>.

## Note

For testing dissolved oxygen in water used in boilers and steam raising plant, use the DO/0.8 or DO/2 tests (see instructions Phot.49 and Phot.50).

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