



## Parameter

Dissolved oxygen

## Sample Type

Surface water

## Introduction

The analysis for dissolved oxygen (DO) is a key test in water pollution control activities. DO concentration is determined with a temperature compensating meter that works with a polarographic membrane-type sensor.

## Result Statistics

# Trials	Average	Temperature	%CV
5	12.35 mg/L	3.2-3.4°C	0.34

## Recommended Equipment

3-Star portable DO meter (Orion 1213000); Dissolved Oxygen Probe (Orion 083010MD); Electrode Storage Sleeve (Orion 121003)

## Required Solutions

Electrolyte Solution (Orion 080514); deionized water (DI).

## Solutions Preparation

None required

## Meter Setup

Connect the electrode to the Star Meter and turn the meter on. Set the meter to Auto-Read mode. In Setup mode of the meter, set resolution to 0.01 mg/L, set the salinity correction factor to 0000, set the barometric pressure compensation to AUTO and set the calibration type to Air. If all steps were followed correctly the meter display will show two decimal places in the bottom line and "mg/L" to the right of the bottom line. The temperature will also be displayed in the top left of the screen.

## Electrode Setup

See the electrode Users Guide for assembly and preparation of the electrode. Place the electrode into a calibration sleeve (be sure the sponge in the sleeve is wet) and connect to Star Meter. The probe is continuously polarized when connected to the instrument. Allow electrode to polarize for at least 30 – 50 minutes.

## Electrode Performance Check

Check the electrode slope according to the calibration procedure. Results should agree with desired criteria. See maintenance section of the DO Probe Instruction Sheet if slope is not acceptable.

## Electrode Storage, Soaking, and Rinsing

For short term storage, overnight or between measurements, the probe should remain plugged into the meter, and kept in calibration sleeve or BOD bottle. For long-term storage, disconnect the probe from the meter, remove the membrane cap, clean and dry the probe.

## Sample Preservation

None required.

## Sample Preparation

None required, field dissolved oxygen can be measured directly.

## Calibration

Perform calibration before measurements using water-saturated air as the calibration standard. Before calibration be sure that the probe has polarized, and the air calibration chamber has had at least 10 to 15 minutes to attain proper humidity. Press the CALIBRATE key on the meter. The "cal" indicator will be displayed. Wait until "% sat" icon on DO calibration screen stops flashing and 102.3 % sat displayed for a few seconds. The meter automatically returns to MEASURE mode.

## Analysis

Rinse probe with DI water. Place probe in sample. The water level should be above the thermistor ring of the electrode. Press the MEASURE key on the meter. The "mg/L" icon will flash as the measurement is being made. Swirl electrode to provide sufficient sample flow across membrane surface to overcome erratic response. When a stable reading is achieved, the "mg/L" icon will become solid and the oxygen concentration value on the display will freeze.

## Comments

As noted above, it takes 30-50 minutes for the probe to polarize so be sure to allow for this time required before making measurements.

## Quality Control (QC)

Recommended QC procedures include: calibration, check of the thermistor response against a calibrated thermometer, and duplicate samples.



Dissolved Oxygen in Surface Water	(mg/L) Dissolved Oxygen
Sample 1	12.33
Sample 2	12.30
Sample 3	12.36
Sample 4	12.37
Sample 5	12.41
Mean	12.35
Standard Deviation	0.04
%CV	0.34