



Parameter and Sample Type

Dissolved Oxygen in Wine (Tank)

Introduction

The oxygen content of wine must be monitored throughout the wine-making process to ensure wine quality is maintained. Using the Rugged Dissolved Oxygen (RDO) probe with automatic temperature compensation and a portable meter, reliable measurements can be made directly in the tanks which hold the wine.

Result Statistics

See page 2

Recommended Equipment

3-Star Plus Portable RDO meter (Orion 1213300); Dissolved Oxygen Probe (Orion 087010MD); Calibration Sleeve (087003) Optional: RS232 computer interface cable (1010053), Stainless steel sensor guard (087002)

Required Solutions

Deionized water (DI).

Meter Setup

Turn meter on. Move pointer arrow to the DO reading line and set units to mg/L. In Setup mode, set read type to auto, log delete to no (to allow overwrite of the oldest data points), log auto to on, and set the following DO settings: resolution to 0.01 mg/L, salinity correction to manual, salinity correction factor to 0000, barometric pressure to auto, and calibration type to air.

Electrode Setup

See the Probe Users Guide for assembly and preparation of the probe. Place the probe into a calibration sleeve (be sure the sponge in the sleeve is moist) and connect to the meter. Once assembled, probe can be used immediately.

Electrode Performance Check

RDO probe should read between 98 and 102% saturation in the calibration sleeve after calibration. Expect the probe to calibrate within 2 minutes when working properly and following a thorough post-sample rinse (See Comments section). See probe manual if probes do not pass check requirements

Electrode Storage, Soaking, and Rinsing

For short term storage, overnight or between measurements, the RDO probe should be kept in the calibration sleeve or a BOD bottle with water saturated air. For long-term storage, keep the probe in the calibration sleeve. Rinse the probe thoroughly with DI water and blot sensor dry with a lint free cloth after each sample measurement.

Sample Preservation

Samples cannot be preserved; measure in-situ for best results or immediately following collection.

Sample Preparation

None required, dissolved oxygen can be measured directly in the tank.

Calibration

Make sure the arrow is pointing to the DO line in Measure mode. Perform RDO calibration using water-saturated air (calibration sleeve) as the calibration standard. Calibrate the probe; 100.0% will be displayed when probe is calibrated.

Analysis

Rinse probe with DI water and blot excess rinse water off with a lint-free wipe. If measuring below the tank surface, attach the sensor guard to sink the probe to the desired depth. Place probe in the tank, making sure that the temperature sensor is also submerged in the sample. Take an auto-reading of the sample. For best results a second auto-reading should be taken as it will take the electrode 1-2 minutes to fully stabilize in the wine sample. Use the second stable value for the oxygen content of the wine. Both auto-readings will be logged in the meter.

Comments

It is important to thoroughly clean the probe after sample measurement. Rinse with DI water and thoroughly blot all excess water with a lint free cloth *several times* before putting the probe in the calibration sleeve. Rinsing following all sample measurements should take 5-10 minutes. When downloading the logs after measurements are made, be sure that the arrow is pointing to the line of interest in the measurement screen before downloading the calibration and data logs.

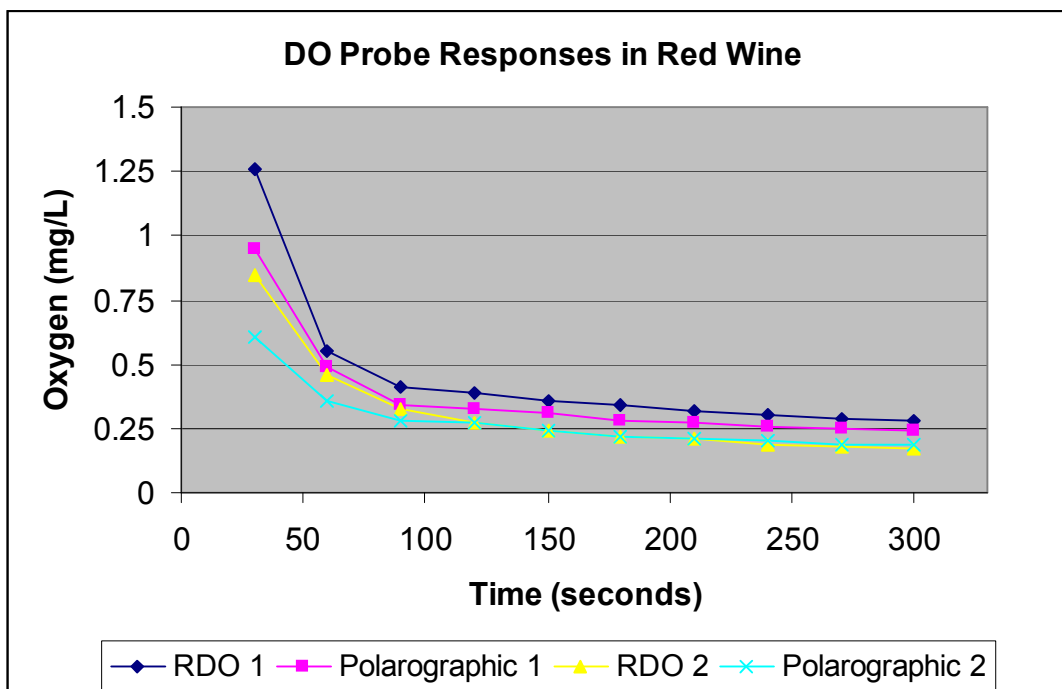
Quality Control (QC)

Recommended QC procedures include: calibration, check of the thermistor response against a calibrated thermometer, and recovery of saturated DI water sample.



Dissolved Oxygen Readings in Wine Sample

Minute	Oxygen (mg/L)			
	Sample 1		Sample 2	
	RDO	Polarographic	RDO	Polarographic
1	0.55	0.49	0.46	0.36
2	0.39	0.33	0.27	0.27
3	0.34	0.28	0.22	0.22
4	0.30	0.26	0.19	0.20
5	0.28	0.24	0.17	0.19



Notes

The speed, accuracy and precision of the RDO probe is equivalent or superior to current DO measurement techniques. See Electrode Log 57 DO Comparison of Methods for detailed information.

Keeping the calibration sleeve clean and free from water or sample droplets is essential to getting good calibration and read back values in water saturated air. Therefore the probe should be rinsed thoroughly with DI water and all excess water wiped from probe with a lint free cloth prior to putting the probe in the calibration sleeve.

RDO probes do not require stirring or a sample stream for accurate measurements.

The RDO probe is offered with a variety of cable lengths. See the probe's User Guide for more information.

If readings are slow or not consistent, check that the temperature sensor is completely submerged in the sample. If the temperature sensor is not in the sample, the dissolved oxygen readings will be incorrect.