



NOMA*Sense*™ Oxygen Analyzer Set



Nomacorc offers a solution to rapidly measure the total oxygen contents in wine. The solution provides a direct and facile reading for the dissolved oxygen concentration in the wine and the amount of gaseous oxygen in e.g. the headspace of a bottle. The method is based on state-of-the-art luminescence technology developed by Presens® Precision Sensing GmbH which allows for a precise and non-destructive quantification of the oxygen value.

WHAT IS IN A PRESENS® OXYGEN ANALYZER SET?

- Presens® Fibox™ 3 LCD trace v7 oxygen analyzer
- For non-invasive oxygen detection: Polymeric optical fiber 2.5 m long & 50 sensor spots with 5 mm diameter (PSt3 or PSt6)
- For invasive oxygen detection: Dipping probe with 10 m length



KEY BENEFITS OF THE PRESENS® OXYGEN ANALYZER SET

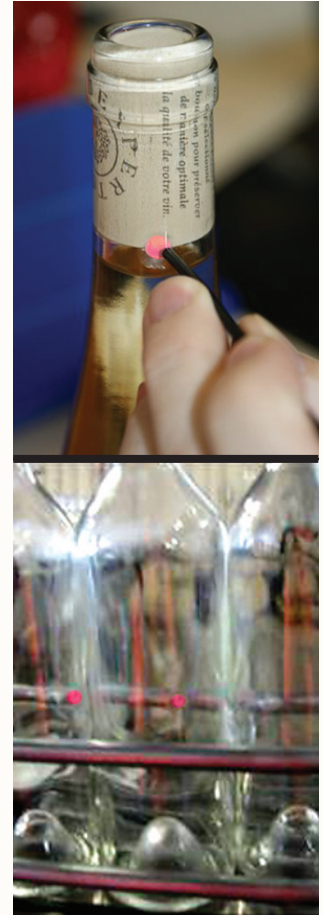
- Accurate tool to determine the total amount of oxygen in wine (both dissolved and gaseous oxygen in headspace)
- Portable and versatile tool for measuring oxygen at the various stages of winemaking
- Non-destructive and non-invasive tool reducing quality testing time & cost (e.g. lower number of replicates & less samples to be prepared)
- Sensors can be re-used many times and withstand winery cleaning practices

HOW DOES IT WORK?

The unique feature of this technology is that the read out of the oxygen sensor spot can be done non-invasively so that e.g. the decrease of the dissolved oxygen of a bottle of wine can be followed in time without the need to open it. Of course the technology also allows for invasive analysis of the oxygen contents via a dipping probe which can be used to determine the oxygen concentration at different locations inside e.g. a vat, barrel or storage tank.

Nomacorc has developed a basic set for oxygen measurements in the various stages of the winemaking process. The set comes with one oxygen analyzer and different sensors which are tuned to the application. The Presens® Fibox™ 3 LCD Trace oxygen analyzer is portable and can be used for off-line and in-line measurements. The robust Presens® oxygen sensor spots are precalibrated and withstand normal winery cleaning practices. Likewise, the sensors come in two types, PSt3 and PSt6, which cover all possible oxygen ranges in the winery.

The PSt6 has the lowest limit of detection for dissolved oxygen amongst peer technologies (1 ppb) and can be utilized when e.g. doing packaging permeation testing, following oxygen consumption in fermentation or barrel/bottle aging processes. The PSt3 sensor can be used at high oxygen concentrations (up to 45 ppm) which allows for quantification of the oxygen pickup and consumption at e.g. splashing, racking, pumping, micro-oxygenation or bottling.



SENSOR RECOMMENDATIONS FOR WINEMAKING STAGES

PRESENSE FIBOX 3 LCD TRACE V7	INVASIVE OXYGEN SENSOR		NON-INVASIVE OXYGEN SENSOR	
	PSt3	PSt6	PSt3	PSt6
Pressing/crushing	✓	✗	(✓)	✗
Fermentation	✓	✓	✓	✓
Barrel aging	✓	✓	✓	✓
Micro-oxygenation	✓	✓	✓	✓
Bottling	✓	✗	✓	✗
Bottle aging	✗	✗	✓	✓
Closure permeation testing	✗	✗	✗	✓



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SENSOR SPOT SPECIFICATIONS

SPECIFICATIONS	SENSOR TYPE PSt3		SENSOR TYPE PSt6	
	GASEOUS & DISSOLVED OXYGEN	DISSOLVED OXYGEN	GASEOUS & DISSOLVED OXYGEN	DISSOLVED OXYGEN
Measurement range	0 – 100% O ₂ 0 – 1000 hPa	0 – 45 mg/L 0 – 1400 µmol	0 – 4.2% O ₂ 0 – 41.4 hPa	0 – 1.8 mg/L 0 – 56.9 µmol
Limit of detection	0.03% oxygen	15 ppb	0.002% oxygen	1 ppb
Resolution	± 0.01% O ₂ at 0.21% O ₂ ± 0.1% O ₂ at 20.9% O ₂ ± 0.1 hPa at 2 hPa ± 1 hPa at 207 hPa	± 1.4 µmol at 283.1 µmol ± 0.14 µmol at 2.83 µmol	± 0.0007% O ₂ at 0.002% ± 0.0015% O ₂ at 0.2% O ₂ ± 0.007 hPa at 0.23 hPa ± 0.015 hPa at 2.0 hPa	± 0.010 µmol at 0.03 µmol ± 0.020 µmol at 2.8 µmol
Accuracy	± 0.4% O ₂ at 20.9% O ₂ ± 0.05% O ₂ at 0.2% O ₂		± 1 ppb or ± 3% of the respective concentration; whichever is higher	
Drift at 0% Oxygen	< 0.03% O ₂ within 30 days (sampling interval of 1 min)		< 2 ppb within 30 days (sampling interval of 1 min)	
Measurement temperature range	0 – 50°C		0 – 50°C	
Response time (t90)	< 6s	< 40s	< 6s	< 40s
PROPERTIES				
Compatibility	Aqueous solutions, ethanol, methanol			
No cross-sensitivity with	pH 1 – 14 CO ₂ , H ₂ S, SO ₂ Ionic species			
Sterilization procedures	Steam sterilization Ethylene oxide (EtO) Gamma irradiation			
Cleaning procedures	Cleaning in place (CIP, 5% NaOH, 90°C, 194°F) 3% H ₂ O ₂ Acidic agents (HCl, H ₂ SO ₄), max. 4 – 5%			
Calibration	Two-point calibration with oxygen-free environment (nitrogen, sodium, sulfite) and air-saturated environment		Two-point calibration in oxygen-free environment (nitrogen) and a second calibration value optimally between 1 and 2% oxygen	
Storage Stability	18 months provided the sensor material is stored at room temperature in the dark			



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SPECIFICATIONS

INSTRUMENT FIBOX 3 LCD -TRACE V7

Dimensions, DxWxH (mm)	220 x 110 x 100
Weight (kg)	1.62
Channels	1 x optical channel (SMA connector), designed for mini-sensors; 1 x PT1000 connector
Digital Interface	RS 232 interface with galvanic isolation (19200 Baud, Databits 8), RJ connector (RJ 6/4 - SUB-D 9 cable for RS232 PC port included)
Analog outputs	2 x 12bit, programmable voltage outputs with galvanic isolation (0–10 V) 2 x 12bit, programmable current outputs with galvanic isolation (4–20 V)
Analog inputs	2 x 12bit, programmable voltage inputs with galvanic isolation (0–10 V)
Power Supply	Accu: Li-Ion 14,8 V 4Ah (Charge adapter 110–240 VAC, 50/60 Hz included) *operating time: up to 8 hours with new and fully charged battery

Specification	Range	Resolution	Accuracy
Analog output voltage	programmable	± 2,5mV (12bit)	± 10mV
Analog output current	programmable	± 4µA (12bit)	± 5µA
Analog input voltage	programmable	± 2,5mV (12 bit)	± 10mV
Acquisition time	programmable (default 1 second)		
Temperature	0–50°C	±0.2°C	±1°C

SOFTWARE OXYVIEW

Oxygen units	User selectable from: air-saturation, oxygen-saturation, hPa, Torr, ppm/ppb, µmol
Compatibility	Windows 2000/Millennium/XP/Vista

ENVIRONMENTAL CONDITIONS

Operating Temperature (°C)	0 to +50
Storage Temperature (°C)	-10 to +65
Relative humidity (%)	up to 95 non-condensing (IP 64)

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PRECISE SINGLE-CHANNEL OXYGEN TRANSMITTERS—TEMPERATURE COMPENSATED SYSTEM

For use with non-invasive oxygen sensors & sensor probes • Measure in liquid and gas phase
One calibration for a multitude of sensor spots • Set-up is used for multiple positions in the winemaking process
Software & instructions manual included • On-site audit and training available