pyroscience
sensor technology

Specifications

OPTICAL OXYGEN SENSOR SPOTS & FOILS, RESPIRATION VIALS

1 SENSOR SPECIFICATIONS

Only valid in water/gas (typ. air components) for 2-point calibrated sensors at 20°C, 1013mbar absolute pressure, using default measuring parameters/modes!

Specifications are valid for oxygen sensor spots (item no.: **OXSP5**), self-adhesive oxygen sensor spots (item no.: **OXSP5-ADH**), sterilized self-adhesive oxygen sensor spots (item no.: **OXSP5-ADH-STER**), oxygen sensor foil (item no.: **OXFOIL**), and the oxygen sensor of respiration vials (item no.: **OXVIAL4**, **OXVIAL20**, **TOVIAL20**, **PHTOVIAL20**).

1.1 Gas Phase: partial pressure pO_2 (hPa), volume percent pV (% O_2 gas)

For a calibrated sensor, the partial oxygen pressure pO_2 in units of hPa (equivalent to mbar) is the fundamental oxygen unit measured by the oxygen meter (in gas and water phase).

Specifications		
Measuring Range Optimum Maximum (not specified)	**% O2 gas** 0-50% O2 0-100% O2	**hPa** 0-500 hPa 0-1000 hPa
Accuracy * at 1% O2/10 hPa at 20% O2/200 hPa	 ±0.02% O2 ±0.2% O2	 ±0.2 hPa ±2 hPa
Resolution at 1% O2/10 hPa at 20% O2/200 hPa	 0.01% O2 0.05% O2	 0.1 hPa 0.5 hPa
Detection Limit	0.02% O2	0.2 hPa

* The absolute accuracy of full range sensors depends on the calibration mode. For 1-point calibrated sensors these values increase due to a decreasing accuracy. More details on request.

1.2 Dissolved Oxygen: % air saturation, µmol/L, mg/L = ppm, mL/L

Oxygen dissolved in water can be expressed in % air saturation and in concentration units like µmol/L, mg/L (ppm), and mL/L. For details on calculation of dissolved oxygen units from partial pressure readings (interpolation formula based on temperature, atmospheric pressure and salinity), please see the respective sensor/oxygen meter manuals.

Specifications		
Measuring Range Optimum Maximum (not specified)	**% air saturation (a.s.)** 0-250% a.s. 0-500% a.s.	**mg/L (ppm)** 0-22 mg/L 0-44 mg/L
Accuracy * at 5% a.s./0.44 mg/L at 95% a.s./8.8 mg/L	 ±0.1% a.s. ±1% a.s.	 ±0.01 mg/L ±0.1 mg/L
Resolution at 5% a.s./0.44 mg/L at 95% a.s./8.8 mg/L	 0.05% a.s. 0.25% a.s.	 0.005 mg/L 0.025 mg/L
Detection Limit	0.1% a.s.	0.01 mg/L

* The absolute accuracy of the full range sensors depends on the calibration mode. For 1-point calibrated sensors these values increase due to a decreasing accuracy. More details on request.

1.3 General Characteristics

Response Time (t90)‡ Gas (standard) Water (standard)	 <7 sec <15 sec
Temperature Range	specified: 0°C (32°F) to 50°C (122°F)
Minimum Lifetime	20,000,000 data points
Application time	For self-adhesive sensor spots (**-ADH**) in liquids limited to max. 1 month
Calibration Modes	1-point and 2-point calibration
Application Areas	Laboratory, industry, research. **NOT** for medical or any safety-critical application. **NOT** for application in humans. **NOT** for application in food intended for human consumption.

‡ Typical response times for 90% signal change. For liquids: measured for the transition from air into a stirred solution of 1% Na_2SO_3

2 APPLICABILITY AND CROSS-SENSITIVITY

	Applicability	Cross-Sensitivity	NO Cross-Sensitivity
Water/Aqueous solutions	X		
Gas Phase (typ. air components)	X		
Ethanol[1]	short-term only		
Methanol[1]	short-term only		
Isopropanol[1]	short-term only		
Other organic solvents[2]		X	
Chlorine gas (Cl_2), NO_2 gas, bleach		X	
pH 1-14[3]			X
CO_2			X
CH_4			X
H_2S			X
Any ionic species			X

[1] Only diluted and after conditioning– contact info@pyroscience.com for more information.
[2] Includes liquid solvents and solvent vapors.
[3] pH 2-9 for **OXSP5-ADH** & **OXSP5-ADH-STER**

3 CLEANING, STERILIZATION, STORAGE

Cleaning	3% H_2O_2, soap solution, short-term ethanol
Sterilization	short-term 70% ethanol, short-term 70% isopropanol; ethylene oxide (EtO, EO) sterilization (details on request); autoclavable few cycles at 121°C for 15 min with special precautions (details on request, respiration vials only without lid & septum).
Storage	>3 years in darkness at room temperature

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