

# 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<sub>2</sub> (hPa), volume percent pV (% O<sub>2</sub> gas)

For a calibrated sensor, the partial oxygen pressure pO<sub>2</sub> in units of hPa (equivalent to mbar) is the fundamental oxygen unit measured by the oxygen meter (in gas and water phase).

Specifications		
<b>Measuring Range</b> Optimum Maximum (not specified)	<b>% O<sub>2</sub> gas</b> 0-50% O <sub>2</sub> 0-100% O <sub>2</sub>	<b>hPa</b> 0-500 hPa 0-1000 hPa
<b>Accuracy *</b> at 1% O <sub>2</sub> /10 hPa at 20% O <sub>2</sub> /200 hPa	±0.02% O <sub>2</sub> ±0.2% O <sub>2</sub>	±0.2 hPa ±2 hPa
<b>Resolution</b> at 1% O <sub>2</sub> /10 hPa	0.01% O <sub>2</sub>	0.1 hPa

at 20% O <sub>2</sub> /200 hPa	0.05% O <sub>2</sub>	0.5 hPa
<b>Detection Limit</b>	0.02% O <sub>2</sub>	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		
<b>Measuring Range</b> Optimum Maximum (not specified)	<b>% air saturation (a.s.)</b> 0-250% a.s. 0-500% a.s.	<b>mg/L (ppm)</b> 0-22 mg/L 0-44 mg/L
<b>Accuracy *</b> 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
<b>Resolution</b> 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
<b>Detection Limit</b>	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

<b>Response Time (t<sub>90</sub>)‡</b> Gas (standard) Water (standard)	<7 sec <15 sec
<b>Temperature Range</b>	specified: 0°C (32°F) to 50°C (122°F)
<b>Minimum Lifetime</b>	20,000,000 data points
<b>Application time</b>	For self-adhesive sensor spots (-ADH) in liquids limited to max. 1 month
<b>Calibration Modes</b>	1-point and 2-point calibration

<b>Material of Septum (Respiration Vials)</b>	Butyl/PTFE
<b>Application Areas</b>	Laboratory, industry, research. <b>NOT</b> for medical or any safety-critical application. <b>NOT</b> for application in humans. <b>NOT</b> 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<sub>2</sub>SO<sub>3</sub>

## 2 APPLICABILITY AND CROSS-SENSITIVITY

	Applicability	Cross-Sensitivity	NO Cross-Sensitivity
Water/Aqueous solutions	X		
Gas Phase (typ. air components)	X		
Ethanol <sup>1</sup>	short-term only		
Methanol <sup>1</sup>	short-term only		
Isopropanol <sup>1</sup>	short-term only		
Other organic solvents <sup>2</sup>		X	
Chlorine gas (Cl <sub>2</sub> ), NO <sub>2</sub> gas, bleach		X	
pH 1-14 <sup>3</sup>			X
CO <sub>2</sub>			X
CH <sub>4</sub>			X
H <sub>2</sub> S			X
Any ionic species			X

<sup>1</sup> Only diluted and after conditioning- contact [info@pyroscience.com](mailto:info@pyroscience.com) for more information.

<sup>2</sup> Includes liquid solvents and solvent vapors.

<sup>3</sup> pH 2-9 for **OXSP5-ADH** & **OXSP5-ADH-STER**

### 3 CLEANING, STERILIZATION, STORAGE

<p><b>Cleaning</b></p>	<p>Oxygen Spots &amp; Foils</p> <ul style="list-style-type: none"> <li>• 3% H<sub>2</sub>O<sub>2</sub>, soap solution, short-term ethanol</li> </ul> <p>Combined <b>PHTOVIALS</b>:</p> <ul style="list-style-type: none"> <li>• dionized water only</li> </ul>
<p><b>Sterilization</b></p>	<p>Oxygen Spots &amp; Foils</p> <ul style="list-style-type: none"> <li>• short-term treatment 70% ethanol or 70% isopropanol</li> <li>• ethylene oxide (EtO, EO) sterilization (details on request)</li> <li>• autoclaving: few cycles at 121°C for 15 min with special precautions (details on request), <b>not</b> applicable for <b>OXSP5-ADH</b> and <b>OXSP5-ADH-STER</b>, respiration vials only without lid &amp; septum</li> </ul> <p>Combined <b>PHTOVIALS</b>:</p> <ul style="list-style-type: none"> <li>• sterilization with 2% glutaraldehyde solution</li> <li>• sterilization with ethylene oxide (EtO, EO) (details on request)</li> <li>• autoclavable <b>once</b> at 121°C for 15 min only without lid &amp; septum and with special precautions (details on request).</li> </ul>
<p><b>Storage</b></p>	<p>&gt;3 years in darkness at room temperature</p>

## Contact

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