

Ozone



Where is it found?

Ozone (O₃) is found in the troposphere and it is the result of the atmospheric reaction of a number of precursor pollutants, which come from both natural and anthropogenic sources.

Precursor pollutants are originated by human activities and include hydrocarbons and nitrogen oxides. They are largely emitted by cars and other vehicles, fossil fuel power plants, oil refineries, the agriculture sector and a number of other industries.

Why is it harmful?

O₃ is a reactive gas that exists in two layers of the atmosphere: the stratosphere (upper layer) and the troposphere (at ground level and up to 15 km). Ozone, in the upper layer, is essential to protect the Earth from the sun's ultraviolet rays.

At lower levels, it is an important greenhouse gas and an air pollutant, which is harmful to human and ecosystem's health. It is also the major component of urban smog.

O₃ cartridge

The O₃ cartridge has a built-in electrochemical sensor responsive to NO₂ and O₃ concentrations. Hence, in order to measure accurately the O₃ concentration, it is required to install in the same device the NO₂ cartridge.

The Kunak algorithm considers both concentrations allowing for accurate O₃ measurements with no NO₂ influence, even at high temperatures which are related to higher O₃ concentration due to the solar radiation.

Type	Electrochemical	Limit of Detection (LOD) ⁽⁷⁾	3 ppb
Unit of measurement	µg/m ³ , ppb	Repeatability ⁽⁸⁾	4 ppb
Measurement range ⁽¹⁾	0 - 2,000 ppb	Response time ⁽⁹⁾	< 70 sec
Resolution ⁽²⁾	1 ppb	Typical accuracy ^{(11) (12)}	± 8 ppb
Operating temp. range ⁽³⁾	-30 to 45°C	Typical precision R ² ⁽¹⁰⁾	> 0.9
Operating RH range ⁽⁴⁾	10 to 99 %RH	Typical slope ⁽¹⁰⁾	0.85 - 1.18
Recommended RH range ⁽⁴⁾	15 to 85 %RH	Typical intercept (a) ⁽¹⁰⁾	-3 ppb ≤ a ≤ +3 ppb
Operating life ⁽⁵⁾	> 24 months	DQO - Typical U(exp) ⁽¹³⁾	< 20%
Guarantee range ⁽⁶⁾	20 ppm	Typical Intra-model variability ⁽¹⁴⁾	< 1 ppb