

Sulphur dioxide



Where is it found?

Sulphur dioxide (SO₂) is an invisible gas and has a nasty smell. It is produced by the combustion of any substance that contains sulphur. The main anthropogenic source of SO₂ in the atmosphere comes from combustion of coal or fossil fuels while small sources can be found in metallurgical industry and naturally like volcanic eruptions.

Locomotives, ships and other vehicles that burn fuel with a high sulphur content are other emission sources. Besides, it can react with other compounds in the atmosphere contributing to the formation of particulate matter.

Why is it harmful?

SO₂ gas is a respiratory tract and eye irritant that affects humans very quickly (within 10-15 minutes). Long exposures affect lung defences and may aggravate the existing cardio vascular diseases.

It also causes damage to ecosystems and it contributes to acid rain when oxidized to sulphuric acid. This provokes acidification of ecosystems, injuries and necrosis in vegetation and deterioration of materials.

SO₂ cartridge

The SO₂ cartridge has a built-in electrochemical sensor which presents high cross-sensitivities with O₃, NO₂ and CO. When used together with the NO₂, O₃ and CO cartridges, the Kunak algorithm can correct these cross-sensitivities, improving the accuracy of the measurements. However, it is not recommended for applications requiring accurate SO₂ measurements at very low concentrations (< 20 ppb).

Type	Electrochemical	Limit of Detection (LOD) ⁽⁷⁾	3 ppb
Unit of measurement	µg/m ³ , ppb	Repeatability ⁽⁸⁾	5 ppb
Measurement range ⁽¹⁾	0 - 10,000 ppb	Response time ⁽⁹⁾	< 60 sec
Resolution ⁽²⁾	1 ppb	Typical accuracy ^{(11) (12)}	± 15 ppb
Operating temp. range ⁽³⁾	-30 to 45 °C	Typical precision R ² ⁽¹⁰⁾	> 0.7
Operating RH range ⁽⁴⁾	0 to 99 %RH	Typical slope ⁽¹⁰⁾	0.78 - 1.29
Recommended RH range ⁽⁴⁾	15 to 90 %RH	Typical intercept (a) ⁽¹⁰⁾	-5 ppb ≤ a ≤ +5 ppb
Operating life ⁽⁵⁾	> 24 months	DQO - Typical U(exp) ⁽¹³⁾	< 25%
Guarantee range ⁽⁶⁾	100 ppm	Typical Intra-model variability ⁽¹⁴⁾	< 3 ppb