

Hydrogen sulphide



Where is it found?

Most of the hydrogen sulphide (H_2S) present in the atmosphere originates naturally from the decomposition of organic matter. Anthropogenically, it occurs in processes in which sulphur compounds and organic matter are involved at high temperatures.

Some industrial activities that emit this gas include paper pulp manufacturing, oil refining, water treatment plants and the viscose manufacturing textile industry.

Why is it harmful?

H_2S is highly toxic to humans and other living organisms, even at low concentrations and affects mainly to the respiratory system with the first symptoms being nose, throat and eyes irritation. This compound begins to be detected by the human sense of smell at concentrations much lower than those that can have harmful effects on health.

Short-term exposures of high concentrations can cause headache, dizziness and vomiting.

H_2S cartridge

The H_2S cartridge has a built-in electrochemical sensor very sensitive to its target pollutant allowing to detect small changes in H_2S concentration. This cartridge also responds to **methyl mercaptan (CH_3S)** and other **total reduced sulphur compounds (TRS)**. To cover different applications, there are 2 measurement ranges:

- **Type A:** detects low ppb concentrations in real environments. Although the Kunak algorithm corrects the temperature variations well, it is not recommended to use this cartridge to measure levels below 15 ppb.
- **Type B:** a higher range version that can measure up to 20 ppm, not so precise at low concentrations.

Type	Electrochemical	Limit of Detection (LOD) ⁽⁷⁾	2 ppb ^(A) 0.01 ppm ^(B)
Unit of measurement	$\mu g/m^3$, ppb ^(A) mg/m^3 , ppm ^(B)	Repeatability ⁽⁸⁾	4 ppb ^(A) 0.01 ppm ^(B)
Measurement range ⁽¹⁾	0 - 2,000 ppb ^(A) 0 - 20 ppm ^(B)	Response time ⁽⁹⁾	< 60 sec
Resolution ⁽²⁾	1 ppb ^(A) 0.01 ppm ^(B)	Typical accuracy ^{(11) (12)}	± 10 ppb ^(A) ± 0.05 ppm ^(B)
Operating temp. range ⁽³⁾	-30 to 50 °C	Typical precision R^2 ⁽¹⁰⁾	> 0.8
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 $\leq a \leq +5$ ppb ^(A) -0.05 ppm $\leq a \leq +0.05$ ppm ^(B)
Operating life ⁽⁵⁾	> 24 months	DQO - Typical U(exp) ⁽¹³⁾	-
Guarantee range ⁽⁶⁾	100 ppm	Typical Intra-model variability ⁽¹⁴⁾	< 2 ppb ^(A) < 0.02 ppm ^(B)