

Hydrogen chloride



Where is it found?

Hydrogen chloride (HCl) is a colourless to slightly yellow gas with a pungent odour. On contact with air, it forms dense, white, corrosive vapours. It is produced in the digestive system of most mammals or as a by-product of numerous industrial processes and is mainly used to synthesise inorganic and organic chemicals, such as chlorine, ethylene dichloride and methyl chloride. It is used for fumigation, electroplating, mining, chemical synthesis and the manufacture of synthetic fibres, plastics, dyes and pesticides.

HCl cartridge

The HCl cartridge has a built-in electrochemical sensor capable of monitoring low concentrations (< 1 ppm) as well as high concentrations of HCl, up to 20 ppm, with an accuracy of ± 0.1 ppm. The HCl cartridge has a high cross-sensitivity with H_2S , it is therefore recommended to use an H_2S cartridge together with the HCl cartridge, when high H_2S concentrations are present (at ppm level), allowing the Kunak algorithm to correct this cross-sensitivity to obtain the highest accuracy.

The HCl cartridge is recommended for leak detection in industrial processes, and not for continuous HCl monitoring.

Why is it harmful?

Hydrogen chloride is irritating and corrosive to any tissue it comes into contact with. Brief exposure at low levels can irritate the skin, nose, eyes, throat and larynx, as well as cause burns to the eyes and skin.

Its odour threshold was set at 0.77 ppm, while the irritant concentration has been recorded at 33 ppm.

HCl can react in the atmosphere to form acid aerosols, which can contribute to acid rain. Moreover, this gas can have corrosive effects on metals, building materials and vegetation.

| | |
|--------------------------------------|-------------------------|
| Type | Electrochemical |
| Unit of measurement | mg/m ³ , ppm |
| Measurement range ⁽¹⁾ | 0 - 20 ppm |
| Resolution ⁽²⁾ | 0.01 ppm |
| Operating temp. range ⁽³⁾ | -20 to 50°C |
| Operating RH range ⁽⁴⁾ | 0 to 99 %RH |
| Recommended RH range ⁽⁴⁾ | 15 to 90 %RH |
| Operating life ⁽⁵⁾ | > 24 months |
| Guarantee range ⁽⁶⁾ | 200 ppm |

| | |
|--|---------------|
| Limit of Detection (LOD) ⁽⁷⁾ | 0.01 ppm |
| Repeatability ⁽⁸⁾ | 0.02 ppm |
| Response time ⁽⁹⁾ | < 45 sec |
| Typical accuracy ^{(11) (12)} | ± 0.1 ppm |
| Typical precision R ² ⁽¹⁰⁾ | - |
| Typical slope ⁽¹⁰⁾ | - |
| Typical intercept (a) ⁽¹⁰⁾ | - |
| DQO - Typical U(exp) ⁽¹³⁾ | - |
| Typical Intra-model variability ⁽¹⁴⁾ | < 0.1 ppm |