



Using Alphasense's Chlorine - Cl₂ sensors as Chlorine Dioxide - ClO₂ sensors

Using a Chlorine sensor to monitor for the presence of Chlorine Dioxide

The standard Chlorine (Cl₂) sensor from Alphasense shows an excellent response to Chlorine Dioxide (ClO₂) in fact, the response is about 3.1:1 in favour of ClO₂, making it ideal for monitoring for this contaminant. However, there are some important considerations to bear in mind when making use of a Chlorine sensor for this purpose:

Chlorine sensors respond both to Chlorine and Chlorine Dioxide

Although the Chlorine sensor is 3.1 times more responsive to Chlorine Dioxide than to Chlorine, it will respond to either gas. A sensor that has been calibrated for the detection of ClO₂, and then exposed to a concentration of 3.1-ppm Chlorine will still show a reading of 1 ppm. It works the other way as well. If you calibrate the sensor to Chlorine, then expose it to 1-ppm ClO₂ it will show a reading of 3.1-ppm. You can take advantage of this cross sensitivity ratio when calibrating the sensor.

How do you calibrate the Chlorine sensor for the measurement of Chlorine Dioxide?

We would normally suggest using the same mixture of 5-ppm Chlorine (balance nitrogen) for calibrating the sensor for the detection of either gas. If the sensor is calibrated for the detection of Chlorine, simply adjust the readings of the sensor when exposed to the 5-ppm calibration gas to register 5-ppm. On the other hand, if the sensor is being calibrated for the measurement of Chlorine Dioxide, the readings should be adjusted to register 1.7 ppm. Because 1.7-ppm of ClO₂ would produce the same electrical output from the sensor as 5-ppm Chlorine, a concentration of 1- ppm ClO₂ will produce a reading of 1- ppm when an instrument is adjusted in this manner.

Instruments that have been calibrated for measurement of Chlorine Dioxide should not be used for measurement of Chlorine unless they are re-calibrated

Be careful that instruments that have been calibrated for Chlorine Dioxide are labelled "Not for use for measurement of Chlorine". Remember that in an instrument calibrated for Chlorine Dioxide, it would take 3.1-ppm Chlorine to produce a reading of 1- ppm on the instrument. Instruments should be re-calibrated before being used to measure Chlorine.

To recalibrate instruments simply adjust the readings to 5-ppm when you expose the sensor to 5-ppm chlorine calibration gas.

