

Understanding Your Air Quality Readings, the Overall Index (US), and Color Scale



Kaiterra created the Overall Index to provide an at-a-glance, holistic view of your air, while simultaneously letting you know which air pollutant to tackle first. Utilizing the same methodology and breakpoints as the EPA's AQI standard, an index is calculated for each individual pollutant, and the highest index is displayed as the Overall Index.

Index Category	Index Value	PM _{2.5} (µg/m ³)	CO ₂ (ppm)	TVOC (ppb)	TVOC (µg/m ³)	O ₃ (ppb)	O ₃ (µg/m ³)
Good	0 - 50	0 - 12	400 - 1000	0 - 220	0 - 1005.5	20 - 50	39.2 - 98.0
Moderate	51 - 100	12.1 - 35.4	1001 - 1500	221 - 660	1005.6 - 3016.7	51 - 100	98.1 - 196.2
High	101 - 150	35.5 - 55.4	1501 - 2000	661 - 1430	3016.8 - 10056.1	101 - 165	196.3 - 323.7
Very High	151 - 200	55.5 - 150.4	2001 - 2500	1431 - 2200	10056.2 - 15084.2	166 - 205	323.8 - 402.3
Very High	201 - 300	150.5 - 250.4	2501 - 5000	2201 - 3300	15084.3 - 20112.3	206 - 405	402.4 - 794.9
Very High	301 - 500	250.5 - 500.4	5001 - 10000	3301 - 5500	20112.4 - 25140.5	406 - 605	795.0 - 1187.6

The table of breakpoints is also a valuable tool for interpreting your air quality readings. When looking at the Overall Index, your air quality is good if it is below 50, with some variation between pollutant concentrations. If your Overall Index value is high, then taking a look at the primary pollutant and the individual pollutant concentrations will inform you which pollutant you should focus on.

Converting Pollutant Concentration to Overall Index

The index conversion algorithm is a piecewise linear function of the pollutant concentration. At the boundary between AQI categories, such as the boundary between Good and Moderate AQI values, there is a discontinuous jump of one AQI unit.

To convert from concentration to AQI, this equation is used:

$$I = \frac{I_{high} - I_{low}}{C_{high} - C_{low}} (C - C_{low}) + I_{low}$$

I = the resulting index value,
C = the pollutant concentration,
C_{low} = the concentration breakpoint below C,
C_{high} = the concentration breakpoint above C,
I_{low} = the index breakpoint corresponding to C_{low},
I_{high} = the index breakpoint corresponding to C_{high}.

If you have any questions regarding how to view, interpret, or convert your air quality readings, please reach out to our team at info@kaiterra.com.

To illustrate how this conversion works, suppose a monitor records a fine particle (PM2.5) concentration of 12.0 µg/m³. Applying the equation above, this PM2.5 concentration converts:

$$\frac{50 - 0}{12.0 - 0} (12.0 - 0) + 0 = 50$$

When multiple air pollutants are measured, the highest resulting index value is displayed, and the Senseedge will indicate the primary pollutants on the “My Air” view.

