Air Quality Sub-Index by Linear Interpolation

Air quality sub-index of a pollutant by linear interpolation between the breakpoints of its category, for any index whose breakpoints you enter.

Method: Linear interpolation between breakpoints; the method of India's National AQI (CPCB, 2014) and the US EPA AQI

Input parameters

Unit system: SI

Parameter	Value	Unit
Pollutant concentration	75.000	
Lower breakpoint of the category	61.000	
Upper breakpoint of the category	90.000	
Index at the lower breakpoint	101.00	
Index at the upper breakpoint	200.00	

Calculated results

Parameter	Value	Unit
Sub-index	148.79	

Notes for this case

- Use the averaging period and breakpoints of your index (India's National AQI, US EPA AQI, ...). The overall AQI is the highest sub-index among the pollutants measured.
- The value is not rounded: the US EPA truncates the concentration to the breakpoints' precision and rounds the index to a whole number; apply your index's rounding rule.

Formula and method

$$I_p = I_{lo} + \frac{I_{hi} - I_{lo}}{BP_{hi} - BP_{lo}}(C_p - BP_{lo})$$

Variables

C_p	Pollutant concentration	-
BP_{lo}	Lower breakpoint of the category	-
BP_{hi}	Upper breakpoint of the category	-
I_{lo}	Index at the lower breakpoint	-
I_{hi}	Index at the upper breakpoint	-
I_p	Sub-index	-

Method and standards

Linear interpolation.

Assumptions and limits

- Piecewise-linear index.
- The sub-index is shown unrounded; indices such as the US EPA AQI truncate the concentration and round the index to a whole number.

References

- Linear interpolation between breakpoints
- the method of India's National AQI (CPCB, 2014) and the US EPA AQI

Report details

Report reference	FCC-T8HT-QHYK (the same inputs always give the same reference)
Generated	17 November 2026, 19:35 UTC
Calculator	Air Quality Sub-Index by Linear Interpolation
Method last reviewed	13 November 2026
Software release	FireCAD Calc, release of 17 November 2026
Release checks	2 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/environmental/air-pollution/aqi-sub-index

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.