



Technical Note #101

Helpful Formulas when Using Gastec Tubes

The following formulas are often helpful in using Gastec tubes in the industries Nextteq serves.

Key

mw	=	molecular weight
mg/L	=	milligrams per Liter
mg/m ³	=	milligrams per cubic meter
P	=	atmospheric pressure at the time of the measurement in hectopascal
ppb	=	parts per billion
ppm	=	parts per million
t	=	temperature at time of measurement in °C

Helpful Formulas

Measuring time = the amount of time required to complete one pump stroke x number of pump strokes

Units of concentration (%) = $\frac{\text{Volume of Substance}}{\text{Volume of Medium}} \times 100$

ppm = $\frac{\text{Volume of Substance}}{\text{Volume of Medium}} \times 10^6$ ppm = % x 10,000
 % = ppm x 0.0001

ppb = $\frac{\text{Volume of Substance}}{\text{Volume of Medium}} \times 10^9$ ppb = % x 10,000,000
 % = ppm x 0.0000001

mg/m³ = ppm x $\frac{mw}{24.45}$ x $\frac{273}{(273 + t)}$ x $\frac{P}{1013}$

ppm = mg/m³ x $\frac{24.45}{mw}$ x $\frac{(273 + t)}{273}$ x $\frac{1013}{P}$

% = mg/L x $\frac{24.45}{mw}$ x $\frac{(273 + t)}{273}$ x 0.1

mg/L = % x $\frac{mw}{24.45}$ x $\frac{273}{(273 + t)}$ x 10