

Calculation of Gas Volume under normal Pressure

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$$C_{(x)} = \frac{0,01203 * V_{(x)} * M_{(x)} * p_{(x)}}{T_{(x)}}$$

$C_{(x)}$	Concentration of the Gas Component	[mg/m ³]
$V_{(x)}$	relative Concentration of the Gas Component	[ppm]
$M_{(x)}$	Molar Mass of the Gas Component	[g/mol]
$p_{(x)}$	Pressure of the Gas Component	[mbar]
	($p = 1013,23$ mbar under normal pressure)	
$T_{(x)}$	Temperature of the Gas Component	[K]
	($T = 273,15$ K under normal pressure)	

Example :Question: How much ppm represents 1 mg/l CH₄ (Methan) under normal pressure?

Calculation:

$$V_{(x)} = \frac{1,0 * 273,15}{0,01203 * 16,042 * 1013,25} = 1,396 \text{ ppm}$$

The molar Mass can determined with the help of the Mendeleev's table:

C	= 12,010 g/mol
$4 \cdot H = 4 \cdot 1,008$	= 4,032 g/mol
Σ	= 16,042 g/mol