N31

Unit	Definition	Units
Molarity (M)	amount solute (in mol)	mol
	volume solution (in L)	L
Molality (m)	amount solute (in mol)	mol
	mass solvent (in kg)	kg
Mole fraction (χ)	amount solute (in mol)	None
	total amount of solute and solvent (in mol)	
Mole percent (mol %)	amount solute (in mol) × 100%	%
	total amount of solute and solvent (in mol)	70
Parts by mass	$\frac{\text{mass solute}}{\text{mass solution}} \times \text{multiplication factor}$	
Percent by mass (%)	Multiplication factor = 100	%
Parts per million by mass (ppm)	Multiplication factor = 10 ⁶	ppm
Parts per billion by mass (ppb)	Multiplication factor $= 10^9$	ppb
Parts by volume (%, ppm, ppb)	volume solute volume solution × multiplication factor *	

^{*}Multiplication factors for parts by volume are identical to those for parts by mass.

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Parts by volume (%, ppm, ppb)	$\frac{\text{volume solute}}{\text{volume solution}} \times \text{multiplication factor}^*$	

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Percent by mass (%)	Multiplication factor = 100	%
Parts per million by mass (ppm)	Multiplication factor = 10 ⁶	ppm
Parts per billion by mass (ppb)	Multiplication factor = 109	ppb
Parts by volume (%, ppm, ppb)	volume solute volume solution × multiplication factor *	

 $[\]begin{tabular}{ll} *Multiplication factors for parts by volume are identical to those for parts by mass. \end{tabular}$

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