

Section 1 Abbreviations and Conversions

1.1 Procedure abbreviations

The abbreviations in [Abbreviations](#) table are common in written chemical procedures:

Table 1 Abbreviations

Abbreviation	Definition	Abbreviation	Definition
°C	degree(s) Celsius (Centigrade)	L	liter—volume equal to one cubic decimeter (dm ³)
°F	degree(s) Fahrenheit	LR	low range
ACS	American Chemical Society reagent grade purity	MDL	method detection limit
APHA Standard Methods	<i>Standard Methods for the Examination of Water and Wastewater</i> , published jointly by the American Public Health Association (APHA), the American Water Works Association (AWWA) and the Water Environment Federation (WEF), is the standard reference work for water analysis. Order from Hach Company, requesting Catalog No. 2270800 or from the Publication Office of the APHA. Many procedures contained in this manual are based on <i>Standard Methods</i> .	MDB	marked dropping bottle
		mg/L	milligrams per liter (ppm)
		µg/L	micrograms per liter (ppb)
		mL	milliliter—1/1000 of a liter. It is approximately the same as a cubic centimeter (and is sometimes called a “cc”).
		MR	medium range
AV	AccuVac®	NIPDWR	National Interim Primary Drinking Water Regulations
Bicn	bicinchoninate	NPDES	National Pollutant Discharge Elimination System
conc	concentrated	P	phosphorus
DB	dropping bottle	PCB	poly chlorinated biphenyl
DBP	disinfection by-products	ppb	parts per billion
CFR	Code of Federal Regulations	ppm	parts per million
EDL	Estimated detection limit	RL	Rapid Liquid™
EPA	Environmental Protection Agency	SCDB	self-contained dropping bottle
F&T	free and total	THM	trihalomethane
FM	FerroMo®	TNT	Test 'N Tube™
FV	FerroVer®	TOC	total organic carbon
FZ	FerroZine®	TPH	total petroleum hydrocarbons
g	grams	TPTZ	2,4,6-Tri-(2-Pyridyl)-1,3,5-Triazine
gr/gal	grains per gallon (1 gr/gal = 17.12 mg/L)	USEPA	United States Environmental Protection Agency
HR	high range	ULR	ultra low range

1.2 Conversions

1.2.1 Chemical species

Species conversion factors for many commonly used chemicals are listed in the [Conversion factors](#) table.

Table 2 Conversion factors

To Convert From...	To...	Multiply By...
mg/L Al	mg/L Al_2O_3	1.8895
mg/L B	mg/L H_3BO_3	5.7
mg/L Ca- CaCO_3	mg/L Ca^{2+}	0.4004
mg/L CaCO_3	mg/L Ca^{2+}	0.4004
mg/L CaCO_3	mg/L Mg^{2+}	0.2428
$\mu\text{g/L}$ Carbo.	$\mu\text{g/L}$ Hydro.	1.92
$\mu\text{g/L}$ Carbo.	$\mu\text{g/L}$ ISA	2.69
$\mu\text{g/L}$ Carbo.	$\mu\text{g/L}$ MEKO	3.15
mg/L Cr^{6+}	mg/L CrO_4^{2-}	2.231
mg/L Cr^{6+}	mg/L Na_2CrO_4	3.115
mg/L Cr^{6+}	mg/L $\text{Cr}_2\text{O}_7^{2-}$	2.077
mg/L Mg- CaCO_3	mg/L Mg^{2+}	0.2428
mg/L Mn	mg/L KMnO_4	2.876
mg/L Mn	mg/L MnO_4^-	2.165
mg/L Mo^{6+}	mg/L MoO_4^{2-}	1.667
mg/L Mo^{6+}	mg/L Na_2MoO_4	2.146
mg/L N	mg/L NH_3	1.216
mg/L N	mg/L NO_3^-	4.427
mg/L Cl_2	mg/L NH_2Cl	0.726
mg/L Cl_2	mg/L N	0.197
mg/L $\text{NH}_3\text{-N}$	mg/L NH_3	1.216
mg/L $\text{NH}_3\text{-N}$	mg/L NH_4^+	1.288
mg/L NO_2^-	mg/L NaNO_2	1.5
mg/L NO_2^-	mg/L $\text{NO}_2^-\text{-N}$	0.3045
mg/L $\text{NO}_2^-\text{-N}$	mg/L NaNO_2	4.926
$\mu\text{g/L}$ $\text{NO}_2^-\text{-N}$	$\mu\text{g/L}$ NaNO_2	4.926
mg/L $\text{NO}_2^-\text{-N}$	mg/L NO_2^-	3.284
$\mu\text{g/L}$ $\text{NO}_2^-\text{-N}$	$\mu\text{g/L}$ NO_2^-	3.284
mg/L $\text{NO}_3^-\text{-N}$	mg/L NO_3^-	4.427
mg/L PO_4^{3-}	mg/L P	0.3261
$\mu\text{g/L}$ PO_4^{3-}	$\mu\text{g/L}$ P	0.3261
mg/L PO_4^{3-}	mg/L P_2O_5	0.7473
$\mu\text{g/L}$ PO_4^{3-}	$\mu\text{g/L}$ P_2O_5	0.7473
mg/L SiO_2	mg/L Si	0.4674
$\mu\text{g/L}$ SiO_2	$\mu\text{g/L}$ Si	0.4674

1.2.2 Hardness conversion

See the [Hardness conversion factors](#) table for the factors to convert hardness from one unit of measure to another. For example, to convert mg/L CaCO₃ to German parts/100,000 CaO, multiply the value in mg/L x 0.056.

Table 3 Hardness conversion factors

Units of Measure	mg/L CaCO ₃	British gr/gal (Imperial) CaCO ₃	American gr/gal (US) CaCO ₃	French Parts/ 100,000 CaCO ₃	German Parts/ 100,000 CaO	meq/L ¹	g/L CaO	lb/cu ft CaCO ₃
mg/L CaCO ₃	1.0	0.07	0.058	0.1	0.056	0.02	5.6x10 ⁻⁴	6.23x10 ⁻⁵
English gr/gal CaCO ₃	14.3	1.0	0.83	1.43	0.83	0.286	8.0x10 ⁻³	8.9x10 ⁻⁴
US gr/gal CaCO ₃	17.1	1.2	1.0	1.72	0.96	0.343	9.66x10 ⁻³	1.07x10 ⁻³
Fr. p/ 100,000 CaCO ₃	10.0	0.7	0.58	1.0	0.56	0.2	5.6x10 ⁻³	6.23x10 ⁻⁴
Ger. p/100,000 CaO	17.9	1.25	1.04	1.79	1.0	0.358	1x10 ⁻²	1.12x10 ⁻³
meq/L	50.0	3.5	2.9	5.0	2.8	1.0	2.8x10 ⁻²	3.11x10 ⁻²
g/L CaO	1790.0	125.0	104.2	179.0	100.0	35.8	1.0	0.112
lb/cu ft CaCO ₃	16,100.0	1,123.0	935.0	1,610.0	900.0	321.0	9.0	1.0

¹ epm/L or mval/L

Note: $\frac{\text{meq}}{\text{L}} = \text{N} \div 1000$

