

Periodic Table of Ion Analysis

COMMONLY DETERMINED METAL IONS

VO ²⁺ 66.9	VO ₂ ⁺ 82.9	VA		
Cr ³⁺ 52.0	CrO ₄ ²⁻ 116.0	VIA		
	MoO ₄ ²⁻ 159.9			
	WO ₄ ²⁻ 247.9			
Fe(CN) ₆ ⁴⁻ 211.8	Fe ²⁺ 55.8	Fe ³⁺ 55.8		
Co(CN) ₆ ³⁻ 214.9	Co ²⁺ 58.9			
Ni(CN) ₄ ²⁻ 162.7	Ni ²⁺ 58.7			
	Pd(CN) ₄ ²⁻ 210.4			
	Pt(CN) ₄ ²⁻ 408.1			
	Pt(CN) ₄ ²⁻ 299.1			
	Cu(CN) _n ¹⁻ⁿ 63.5	Cu ²⁺ 63.5		
	Ag(CN) ₂ ⁻ 159.9			
	AuCl ₄ ⁻ 338.8	Au(CN) ₄ ⁻ 301.0	Au(CN) ₂ ⁻ 249.0	
	Zn ²⁺ 65.4	Zn ⁺ 65.4		
	Cd(CN) ₄ ²⁻ 112.4	Cd ²⁺ 112.4	Cd ⁴⁺ 112.4	
	Hg(CN) ₄ ²⁻ 220.6	Hg ²⁺ 200.6	Hg-CH ₃ ⁺ 220.6	Hg-C ₂ H ₅ ⁺ 220.6
	Sn ²⁺ 118.7	Sn ⁴⁺ 118.7		

METHOD KEY	
SEPARATION	DETECTION MODE
Ion Exchange	Suppressed Conductivity
Ion Exclusion	Suppressed Conductivity
Ion Pairing	Suppressed Conductivity
Ion Exchange	Amperometry
Ion Exclusion	Amperometry
Ion Exchange	Direct UV
Ion Pairing	Direct UV
Ion Exchange	Postcolumn Reaction/Vis

Atomic Number → 56

Recommended Method(s) of Determination
In this example: Ion Exchange Separations with Suppressed Conductivity Detection (see Key at left)

Ionic Charge → Ba²⁺

Atomic (or Formula) Weight → 137.3

Typically Determined as a Polyatomic Ion

MOST COMMONLY OCCURRING METAL VALENCIES

1 H ⁺	2 He																	18 Ar	36 Kr	54 Xe	86 Rn																																																	
3 Li ⁺	4 Be ²⁺																	19 K ⁺	20 Ca ²⁺	21 Sc ^{III}	22 Ti ^{IV}	23 V ^V	24 Cr ^{VI}	25 Mn ^{II}	26 Fe ^{III}	27 Co ^{II}	28 Ni ^{II}	29 Cu ^{II}	30 Zn ^{II}	31 Ga ^{III}	32 Ge ^{IV}	33 As	34 Se	35 Br	36 Kr	37 Rb ⁺	38 Sr ²⁺	39 Y ^{III}	40 Zr ^{IV}	41 Nb ^V	42 Mo ^{VI}	43 Tc ^{VII}	44 Ru ^{III}	45 Rh ^{III}	46 Pd ^{II}	47 Ag ^I	48 Cd ^{II}	49 In ^{III}	50 Sn ^{IV}	51 Sb ^{III}	52 Te	53 I	54 Xe	55 Cs ⁺	56 Ba ²⁺	57 La ^{III}	58 Ce ^{III}	59 Pr ^{III}	60 Nd ^{III}	61 Pm ^{III}	62 Sm ^{III}	63 Eu ^{III}	64 Gd ^{III}	65 Tb ^{III}	66 Dy ^{III}	67 Ho ^{III}	68 Er ^{III}	69 Tm ^{III}	70 Yb ^{III}	71 Lu ^{III}
5 B	6 C	7 N	8 O	9 F	10 Ne	11 Na ⁺	12 Mg ²⁺	13 Al ^{III}	14 Si	15 P	16 S	17 Cl	18 Ar	19 K ⁺	20 Ca ²⁺	21 Sc ^{III}	22 Ti ^{IV}	23 V ^V	24 Cr ^{VI}	25 Mn ^{II}	26 Fe ^{III}	27 Co ^{II}	28 Ni ^{II}	29 Cu ^{II}	30 Zn ^{II}	31 Ga ^{III}	32 Ge ^{IV}	33 As	34 Se	35 Br	36 Kr	37 Rb ⁺	38 Sr ²⁺	39 Y ^{III}	40 Zr ^{IV}	41 Nb ^V	42 Mo ^{VI}	43 Tc ^{VII}	44 Ru ^{III}	45 Rh ^{III}	46 Pd ^{II}	47 Ag ^I	48 Cd ^{II}	49 In ^{III}	50 Sn ^{IV}	51 Sb ^{III}	52 Te	53 I	54 Xe	55 Cs ⁺	56 Ba ²⁺	57 La ^{III}	58 Ce ^{III}	59 Pr ^{III}	60 Nd ^{III}	61 Pm ^{III}	62 Sm ^{III}	63 Eu ^{III}	64 Gd ^{III}	65 Tb ^{III}	66 Dy ^{III}	67 Ho ^{III}	68 Er ^{III}	69 Tm ^{III}	70 Yb ^{III}	71 Lu ^{III}				
13 Al ^{III}	14 Si	15 P	16 S	17 Cl	18 Ar	19 K ⁺	20 Ca ²⁺	21 Sc ^{III}	22 Ti ^{IV}	23 V ^V	24 Cr ^{VI}	25 Mn ^{II}	26 Fe ^{III}	27 Co ^{II}	28 Ni ^{II}	29 Cu ^{II}	30 Zn ^{II}	31 Ga ^{III}	32 Ge ^{IV}	33 As	34 Se	35 Br	36 Kr	37 Rb ⁺	38 Sr ²⁺	39 Y ^{III}	40 Zr ^{IV}	41 Nb ^V	42 Mo ^{VI}	43 Tc ^{VII}	44 Ru ^{III}	45 Rh ^{III}	46 Pd ^{II}	47 Ag ^I	48 Cd ^{II}	49 In ^{III}	50 Sn ^{IV}	51 Sb ^{III}	52 Te	53 I	54 Xe	55 Cs ⁺	56 Ba ²⁺	57 La ^{III}	58 Ce ^{III}	59 Pr ^{III}	60 Nd ^{III}	61 Pm ^{III}	62 Sm ^{III}	63 Eu ^{III}	64 Gd ^{III}	65 Tb ^{III}	66 Dy ^{III}	67 Ho ^{III}	68 Er ^{III}	69 Tm ^{III}	70 Yb ^{III}	71 Lu ^{III}												
58 Ce ^{III}	59 Pr ^{III}	60 Nd ^{III}	61 Pm ^{III}	62 Sm ^{III}	63 Eu ^{III}	64 Gd ^{III}	65 Tb ^{III}	66 Dy ^{III}	67 Ho ^{III}	68 Er ^{III}	69 Tm ^{III}	70 Yb ^{III}	71 Lu ^{III}	72 Hf ^{IV}	73 Ta ^V	74 W ^{VI}	75 Re ^{VII}	76 Os ^{IV}	77 Ir ^{IV}	78 Pt ^{II}	79 Au ^I	80 Hg ^{II}	81 Tl ^{III}	82 Pb ^{II}	83 Bi ^{III}	84 Po ^{IV}	85 At	86 Rn	87 Fr ⁺	88 Ra ²⁺	89 Ac ^{III}	90 Th ^{IV}	91 Pa ^V	92 U ^{VI}	93 Np ^V	94 Pu ^{IV}	95 Am ^{III}	96 Cm ^{III}	97 Bk ^{III}	98 Cf ^{III}	99 Es ^{III}	100 Fm ^{III}	101 Md ^{III}	102 No	103 Lr																									
90 Th ^{IV}	91 Pa ^V	92 U ^{VI}	93 Np ^V	94 Pu ^{IV}	95 Am ^{III}	96 Cm ^{III}	97 Bk ^{III}	98 Cf ^{III}	99 Es ^{III}	100 Fm ^{III}	101 Md ^{III}	102 No	103 Lr	104 Rf ^{IV}	105 Db ^V	106 Sg ^{VI}	107 Bh ^{VII}	108 Hs ^{IV}	109 Mt ^{IV}	110 Ds ^{II}	111 Rg ^I	112 Cn ^{II}	113 Nh ^I	114 Fl ^{II}	115 Uup ^{III}	116 Lv ^{IV}	117 Ts	118 Og	119 Tennessine	120 Oganesson																																								

COMMONLY DETERMINED NONMETAL IONS

III B	H ₂ BO ₃ ⁻ 60.8	BF ₄ ⁻ 86.8										
IV B	CO ₃ ²⁻ 60.0	CN ⁻ 26.0	RCOO ⁻	RCHO	(Carbohydrates)							
	SiO ₃ ²⁻ 76.1	SiF ₆ ²⁻ 142.1										
V B	NO ₃ ⁻ 62.0	NO ₂ ⁻ 46.0	N ₃ ⁻ 42.0	NH ₄ ⁺ 18.0	RNH ₂	R ₂ NH	NR ₃	NR ₄ ⁺				
	PO ₄ ³⁻ 95.0	PO ₃ ³⁻ 79.0	H ₂ PO ₂ ⁻ 65.0	ROPO ₃ ²⁻	RPO ₃ ²⁻	P ₂ O ₇ ⁴⁻ 174.0	P ₃ O ₁₀ ⁶⁻ 253.0	...(POLYPHOSPHATES)				
VI B	AsO ₄ ³⁻ 138.9	AsO ₂ ⁻ 106.9										
	ROH											
VII B	SO ₄ ²⁻ 96.1	SO ₃ ²⁻ 80.1	S ²⁻ 32.1	SCN ⁻ 58.1	ROSO ₃ ⁻	RSO ₃ ⁻	S ₂ O ₃ ²⁻ 112.2	S ₃ O ₆ ²⁻ 192.3	...(POLYTHIONATES)			
	SeO ₄ ²⁻ 143.0	SeO ₃ ²⁻ 127.0										
VIII B	F ⁻ 19.0											
	Cl ⁻ 35.5	ClO ₂ ⁻ 67.5	ClO ₃ ⁻ 83.5	ClO ₄ ⁻ 99.5								
	Br ⁻ 79.9	BrO ₃ ⁻ 127.9										
	I ⁻ 126.9	IO ₃ ⁻ 174.9										

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