Low-Density Sample Types — (soils, powders, liquids)

Color	Meaning
Gray	Not Available
Orange	<3000 ppm
Light green	<400 ppm
Magenta	<50 ppm
Blue	<25 ppm
Yellow	<10 ppm
Green	<5 ppm

Periodic table with per-element detection limits:

Element	Kα1 (keV)	Kβ1 (keV)	Atomic No.	Lα1 (keV)	Lβ1 (keV)
H			1		
He			2		
Li	0.05		3		
Be	0.11		4		
B	0.18		5		
C	0.28		6		
N	0.39		7		
O	0.52		8		
F	0.68		9		
Ne	0.85		10		
Na	1.04	1.07	11		
Mg	1.25	1.3	12		
Al	1.49	1.56	13		
Si	1.74	1.84	14		
P	2.01	2.14	15		
S	2.31	2.46	16		
Cl	2.62	2.82	17		
Ar	2.96	3.19	18		
K	3.31	3.59	19		
Ca	3.69	4.01	20	0.34	0.34
Sc	4.09	4.46	21	0.4	0.4
Ti	4.51	4.93	22	0.45	0.46
V	4.95	5.43	23	0.51	0.52
Cr	5.41	5.95	24	0.57	0.58
Mn	5.9	6.49	25	0.64	0.64
Fe	6.4	7.06	26	0.71	0.72
Co	6.93	7.65	27	0.78	0.79
Ni	7.48	8.26	28	0.85	0.87
Cu	8.05	8.91	29	0.93	0.95
Zn	8.64	9.57	30	1.01	1.03
Ga	9.25	10.26	31	1.1	1.12
Ge	9.89	10.98	32	1.19	1.22
As	10.54	11.73	33	1.28	1.32
Se	11.22	12.5	34	1.38	1.42
Br	11.92	13.29	35	1.48	1.53
Kr	12.65	14.11	36	1.59	1.64
Rb	13.4	14.96	37	1.69	1.75
Sr	14.17	15.84	38	1.81	1.87
Y	14.96	16.74	39	1.92	2
Zr	15.78	17.67	40	2.04	2.12
Nb	16.62	18.62	41	2.17	2.26
Mo	17.48	19.61	42	2.29	2.39
Tc	18.37	20.62	43	2.42	2.54
Ru	19.28	21.66	44	2.56	2.68
Rh	20.22	22.72	45	2.56	2.83
Pd	21.18	23.82	46	2.84	2.99
Ag	22.16	24.94	47	2.98	3.15
Cd	23.17	26.1	48	3.13	3.32
In	24.21	27.28	49	3.29	3.49
Sn	25.27	28.49	50	3.44	3.66
Sb	26.36	29.73	51	3.6	3.84
Te	27.47	31	52	3.77	4.03
I	28.61	32.29	53	3.94	4.22
Xe	29.78	33.62	54	4.11	4.42
Cs	30.97	34.99	55	4.29	4.62
Ba	32.19	36.38	56	4.47	4.83
Hf	55.79	63.23	72	7.9	9.02
Ta	57.53	65.22	73	8.15	9.34
W	59.32	67.24	74	8.4	9.67
Re	61.14	69.31	75	8.65	10.01
Os	63	71.41	76	8.91	10.36
Ir	64.9	73.56	77	9.18	10.71
Pt	66.83	75.75	78	9.44	11.07
Au	68.8	77.98	79	9.71	11.44
Hg	70.82	80.25	80	9.99	11.82
Tl	72.87	82.58	81	10.27	12.21
Pb	74.97	84.94	82	10.55	12.61
Bi	77.11	87.34	83	10.84	13.02
Po	79.29	89.8	84	11.13	13.45
At	81.52	92.3	85	11.43	13.88
Rn	83.78	94.87	86	11.73	14.32
Fr	86.1	97.47	87	12.03	14.77
Ra	88.47	100.13	88	12.34	15.24

Lanthanides 57–71

Element	Kα1	Kβ1	Atomic No.	Lα1	Lβ1
La	33.44	37.8	57	4.65	5.04
Ce	34.72	39.26	58	4.84	5.26
Pr	36.03	40.75	59	5.03	5.49
Nd	37.36	42.27	60	5.23	5.72
Pm	38.72	43.83	61	5.43	5.96
Sm	40.12	45.41	62	5.64	6.21
Eu	41.54	47.04	63	5.85	6.46
Gd	43	48.7	64	6.06	6.71
Tb	44.48	50.38	65	6.27	6.98
Dy	46	52.12	66	6.5	7.25
Ho	47.55	53.88	67	6.72	7.53
Er	49.13	55.68	68	6.95	7.81
Tm	50.74	57.52	69	7.18	8.1
Yb	52.39	59.37	70	7.42	8.4
Lu	54.07	61.28	71	7.66	8.71

Actinides 89–103

Element	Kα1	Kβ1	Atomic No.	Lα1	Lβ1
Ac	90.88	102.85	89	12.65	15.71
Th	93.35	105.61	90	12.97	16.2
Pa	95.87	108.43	91	13.29	16.7
U	98.44	111.3	92	13.61	17.22
Np	101.00	114.18	93	13.95	17.74
Pu	103.65	117.15	94	14.28	18.28
Am	106.35	120.16	95	14.62	18.83
Cm	109.10	123.24	96	14.96	19.39
Bk	111.90	126.36	97	15.31	19.97
Cf	114.75	129.54	98	15.66	20.56
Es	117.65	132.78	99	16.02	21.17
Fm	120.60	136.08	100	16.38	21.79
Md			101		
No			102		
Lr			103		

Group VIII

Legend diagram:

$K_{\alpha1}$ $K_{\beta1}$ — Principal lines keV
Symbol — **Ag**
47 — Atomic Number
Principal lines keV — $L_{\alpha1}$ $L_{\beta1}$

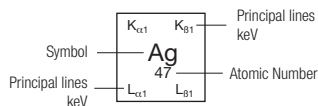**For alloy LODs, please see the separate alloy analysis LOD specifications.**

Detection limits are a function of testing time, sample matrix, and presence of interfering elements. Detection limits are estimates based on 2 minutes test times and detection confidence of 3σ (99.7% confidence). Interference-free detection limits are intended as guidelines: please contact Olympus to discuss your specific application. Rare earth element (REE) LODs are calculated using L lines in the absence of any transition-metal elements.