

# APPENDIX 8

## MASS ABSORPTION COEFFICIENTS $\mu/\rho$ (cm<sup>2</sup>/gm) AND DENSITIES $\rho$

The mass absorption coefficients are extracted from much longer tables on pp. 61-66 of Vol. 4 of the *International Tables for X-Ray Crystallography* [G.11]. Although these coefficients are given to four significant figures, the actual accuracy is much less; the uncertainty ranges from less than 2 percent to more than 15 percent, depending on absorber and wavelength. [G.11] should be consulted for details.

The densities of elements solid at room temperature, except P, are x-ray densities, rounded off, from pp. 46-56 of Vol. 3 of [G.11]. Densities of gases are from *Metals Handbook* (Cleveland: American Society for Metals, 1948).

Absorber	Density (gm/cm <sup>3</sup> )	Mo		Cu		Co		Cr	
		K $\alpha$ 0.711 Å	K $\beta$ 0.632 Å	K $\alpha$ 1.542 Å	K $\beta$ 1.392 Å	K $\alpha$ 1.790 Å	K $\beta$ 1.621 Å	K $\alpha$ 2.291 Å	K $\beta$ 2.085 Å
1 H	0.08375 × 10 <sup>-3</sup>	0.3727	0.3699	0.3912	0.3882	0.3966	0.3928	0.4116	0.4046
2 He	0.1664 × 10 <sup>-3</sup>	0.2019	0.1972	0.2835	0.2623	0.3288	0.2966	0.4648	0.4001
3 Li	0.533	0.1968	0.1866	0.4770	0.3939	0.6590	0.5283	1.243	0.9639
4 Be	1.85	0.2451	0.2216	1.007	0.7742	1.522	1.152	3.183	2.388
5 B	2.47	0.3451	0.2928	2.142	1.590	3.357	2.485	7.232	5.385
6 C	2.27 (graphite)	0.5348	0.4285	4.219	3.093	6.683	4.916	14.46	10.76
7 N	1.165 × 10 <sup>-3</sup>	0.7898	0.6054	7.142	5.215	11.33	8.330	24.42	18.23
8 O	1.332 × 10 <sup>-3</sup>	1.147	0.8545	11.03	8.062	17.44	12.85	37.19	27.88
9 F	1.696 × 10 <sup>-3</sup>	1.584	1.154	15.95	11.66	25.12	18.57	53.14	39.99
10 Ne	0.8387 × 10 <sup>-3</sup>	2.209	1.597	22.13	16.24	34.69	25.72	72.71	54.91
11 Na	0.966	2.939	2.098	30.30	22.23	47.34	35.18	98.48	74.66
12 Mg	1.74	3.979	2.825	40.88	30.08	63.54	47.38	130.8	99.62
13 Al	2.70	5.043	3.585	50.23	37.14	77.54	58.08	158.0	120.7
14 Si	2.33	6.533	4.624	65.32	48.37	100.4	75.44	202.7	155.6
15 P	1.82 (yellow)	7.870	5.569	77.28	57.44	118.0	89.05	235.5	181.6
16 S	2.09	9.625	6.835	92.53	68.90	141.2	106.6	281.9	217.2
17 Cl	3.214 × 10 <sup>-3</sup>	11.64	8.261	109.2	81.79	164.7	125.3	321.5	250.2
18 A	1.663 × 10 <sup>-3</sup>	12.62	8.949	119.5	89.34	180.9	137.3	355.5	275.8
19 K	0.862	16.20	11.51	148.4	111.7	222.0	169.9	426.8	334.2
20 Ca	1.53	19.00	13.56	171.4	129.0	257.4	196.4	499.6	389.3
21 Sc	2.99	21.04	15.00	186.0	140.8	275.5	212.2	520.9	410.7
22 Ti	4.51	23.25	16.65	202.4	153.2	300.5	231.0	571.4	449.0
23 V	6.09	25.24	18.07	222.6	168.0	332.7	254.7	75.06	501.0
24 Cr	7.19	29.25	20.99	252.3	191.1	375.0	288.1	85.71	65.79
25 Mn	7.47	31.86	22.89	272.5	206.7	405.1	311.2	96.08	73.75
26 Fe	7.87	37.74	27.21	304.4	233.6	56.25	345.5	113.1	86.77
27 Co	8.8	41.02	29.51	338.6	258.7	62.86	47.71	124.6	96.06
28 Ni	8.91	47.24	34.18	48.83	282.8	73.75	56.05	145.7	112.5
29 Cu	8.93	49.34	35.77	51.54	38.74	78.11	59.22	155.2	119.5
30 Zn	7.13	55.46	40.26	59.51	45.30	88.71	68.00	171.7	133.5
31 Ga	5.91	56.90	41.69	62.13	46.65	94.15	71.39	186.9	144.0
32 Ge	5.32	60.47	44.26	67.92	51.44	102.0	77.79	199.9	154.5
33 As	5.78	65.97	48.57	75.65	57.01	114.0	86.76	224.0	173.3
34 Se	4.81	68.82	51.20	82.89	62.32	125.1	95.11	246.1	190.4
35 Br	3.12 (liquid)	74.68	55.56	90.29	68.07	135.8	103.5	266.2	206.2