ELECTRICAL RESISTIVITY OF SELECTED ALLOYS

Values of the resistivity are given in units of 10^{-8} Ω m. General comments in the preceeding table for pure metals also apply here.

REFERENCE

C.Y. Ho, et al., *J. Phys. Chem. Ref. Data*, 12, 183-322, 1983.

Aluminum-Copper

	273 K	293 K	300 K	350 K	400 K
Wt % Al					
99[a]	2.51	2.74	2.82	3.38	3.95
95[a]	2.88	3.10	3.18	3.75	4.33
90[b]	3.36	3.59	3.67	4.25	4.86
85[b]	3.87	4.10	4.19	4.79	5.42
80[b]	4.33	4.58	4.67	5.31	5.99
70[b]	5.03	5.31	5.41	6.16	6.94
60[b]	5.56	5.88	5.99	6.77	7.63
50[b]	6.22	6.55	6.67	7.55	8.52
40[c]	7.57	7.96	8.10	9.12	10.2
30[c]	11.2	11.8	12.0	13.5	15.2
25[f]	16.3[*]	17.2	17.6	19.8	22.2
15[h]	—	12.3	—	—	—
10[g]	10.8[*]	11.0	11.1	11.7	12.3
5[c]	9.43	9.61	9.68	10.2	10.7
1[b]	4.46	4.60	4.65	5.00	5.37

Aluminum-Magnesium

	273 K	293 K	300 K	350 K	400 K
Wt % Al					
99[c]	2.96	3.18	3.26	3.82	4.39
95[c]	5.05	5.28	5.36	5.93	6.51
90[c]	7.52	7.76	7.85	8.43	9.02
85	—	—	—	—	—
80	—	—	—	—	—
70	—	—	—	—	—
60	—	—	—	—	—
50	—	—	—	—	—
40	—	—	—	—	—
30	—	—	—	—	—
25	—	—	—	—	—
15	—	—	—	—	—
10[b]	17.1	17.4	17.6	18.4	19.2
5[b]	13.1	13.4	13.5	14.3	15.2

1[a]	5.92	6.25	6.37	7.20	8.03

Copper-Gold

	273 K	**293 K**	**300 K**	**350 K**	**400 K**
Wt % Cu					
99[c]	1.73	1.86[*]	1.91[*]	2.24[*]	2.58[*]
95[c]	2.41	2.54[*]	2.59[*]	2.92[*]	3.26[*]
90[c]	3.29	4.42[*]	3.46[*]	3.79[*]	4.12[*]
85[c]	4.20	4.33	4.38[*]	4.71[*]	5.05[*]
80[c]	5.15	5.28	5.32	5.65	5.99
70[c]	7.12	7.25	7.30	7.64	7.99
60[c]	9.18	9.13	9.36	9.70	10.05
50[c]	11.07	11.20	11.25	11.60	11.94
40[c]	12.70	12.85	12.90[*]	13.27[*]	13.65[*]
30[c]	13.77	13.93	13.99[*]	14.38[*]	14.78[*]
25[c]	13.93	14.09	14.14	14.54	14.94
15[c]	12.75	12.91	12.96[*]	13.36[*]	13.77
10[c]	10.70	10.86	10.91	11.31	11.72
5[c]	7.25	7.41[*]	7.46	7.87	8.28
1[c]	3.40	3.57	3.62	4.03	4.45

Copper-Nickel

	273 K	**293 K**	**300 K**	**350 K**	**400 K**
Wt % Cu					
99[c]	2.71	2.85	2.91	3.27	3.62
95[c]	7.60	7.71	7.82	8.22	8.62
90[c]	13.69	13.89	13.96	14.40	14.81
85[c]	19.63	19.83	19.90	20.32	20.70
80[c]	25.46	25.66	25.72	26.12[*]	26.44[*]
70[i]	36.67	36.72	36.76	36.85	36.89
60[i]	45.43	45.38	43.35	45.20	45.01
50[i]	50.19	50.05	50.01	49.73	49.50
40[c]	47.42	47.73	47.82	48.28	48.49
30[i]	40.19	41.79	42.34	44.51	45.40
25[c]	33.46	35.11	35.69	39.67[*]	42.81[*]
15[c]	22.00	23.35	23.85	27.60	31.38
10[c]	16.65	17.82	18.26	21.51	25.19
5[c]	11.49	12.50	12.90	15.69	18.78
1[c]	7.23	8.08	8.37	10.63[*]	13.18[*]

Copper-Palladium

	273 K	**293 K**	**300 K**	**350 K**	**400 K**
Wt % Cu					

99[c]	2.10	2.23	2.27	2.59	2.92
95[c]	4.21	4.35	4.40	4.74	5.08
90[c]	6.89	7.03	7.08	7.41	7.74
85[c]	9.48	9.61	9.66	10.01	10.36
80[c]	11.99	12.12	12.16	12.51*	12.87
70[c]	16.87	17.01	17.06	17.41	17.78
60[c]	21.73	21.87	21.92	22.30	22.69
50[c]	27.62	27.79	27.86	28.25	28.64
40[c]	35.31	35.51	35.57	36.03	36.47
30[c]	46.50	46.66	46.71	47.11	47.47
25[c]	46.25	46.45	46.52	46.99*	47.43*
15[c]	36.52	36.99	37.16	38.28	39.35
10[c]	28.90	29.51	29.73	31.19*	32.56*
5c	20.00	20.75	21.02	22.84*	24.54*
1[c]	11.90	12.67	12.93*	14.82*	16.68*

Copper-Zinc

	273 K	**293 K**	**300 K**	**350 K**	**400 K**
Wt % Cu					
99[b]	1.84	1.97	2.02	2.36	2.71
95[b]	2.78	2.92	2.97	3.33	3.69
90[b]	3.66	3.81	3.86	4.25	4.63
85[b]	4.37	4.54	4.60	5.02	5.44
80[b]	5.01	5.19	5.26	5.71	6.17
70[b]	5.87	6.08	6.15	6.67	7.19
60	—	—	—	—	—
50	—	—	—	—	—
40	—	—	—	—	—
30	—	—	—	—	—
25	—	—	—	—	—
15	—	—	—	—	—
10	—	—	—	—	—
5	—	—	—	—	—
1	—	—	—	—	—

Gold-Palladium

	273 K	**293 K**	**300 K**	**350 K**	**400 K**
Wt % Au					
99[c]	2.69	2.86	2.91	3.32	3.73
95[c]	5.21	5.35	5.41	5.79	6.17
90[i]	8.01	8.17	8.22	8.56	8.93
85[b]	10.50*	10.66	10.72*	11.10*	11.48*
80[b]	12.75	12.93	12.99	13.45	13.93
70[c]	18.23	18.46	18.54	19.10	19.67
60[b]	26.70	26.94	27.02	27.63*	28.23*

50[a]	27.23	27.63	27.76	28.64*	29.42*
40[a]	24.65	25.23	25.42	26.74	27.95
30[b]	20.82	21.49	21.72	23.35	24.92
25[b]	18.86	19.53	19.77	21.51	23.19
15[a]	15.08	15.77	16.01	17.80	19.61
10[a]	13.25	13.95	14.20*	16.00*	17.81*
5[a]	11.49*	12.21	12.46*	14.26*	16.07*
1[a]	10.07	10.85*	11.12*	12.99*	14.80*

Gold-Silver

	273 K	**293 K**	**300 K**	**350 K**	**400 K**
Wt % Au					
99[b]	2.58	2.75	2.80*	3.22*	3.63*
95[a]	4.58	4.74	4.79	5.19	5.59
90[j]	6.57	6.73	6.78	7.19	7.58
85[j]	8.14	8.30	8.36*	8.75	9.15
80[j]	9.34	9.50	9.55	9.94	10.33
70[j]	10.70	10.86	10.91	11.29	11.68*
60[j]	10.92	11.07	11.12	11.50	11.87
50[j]	10.23	10.37	10.42	10.78	11.14
40[j]	8.92	9.06	9.11	9.46*	9.81
30[a]	7.34	7.47	7.52	7.85	8.19
25[a]	6.46	6.59	6.63	6.96	7.30*
15[a]	4.55	4.67	4.72	5.03	5.34
10[a]	3.54	3.66	3.71	4.00	4.31
5[i]	2.52	2.64*	2.68*	2.96*	3.25*
1[b]	1.69	1.80	1.84*	2.12*	2.42*

Iron-Nickel

	273 K	**293 K**	**300 K**	**350 K**	**400 K**
Wt % Fe					
99[a]	10.9	12.0	12.4	—	18.7
95[c]	18.7	19.9	20.2	—	26.8
90[c]	24.2	25.5	25.9	—	33.2
85[c]	27.8	29.2	29.7	—	37.3
80[c]	30.1	31.6	32.2	—	40.0
70[b]	32.3	33.9	34.4	—	42.4
60[c]	53.8	57.1	58.2	—	73.9
50[d]	28.4	30.6	31.4	—	43.7
40[d]	19.6	21.6	22.5	—	34.0
30[c]	15.3	17.1	17.7	—	27.4
25[b]	14.3	15.9	16.4	—	25.1
15[c]	12.6	13.8	14.2	—	21.1
10[c]	11.4	12.5	12.9	—	18.9
5[c]	9.66	10.6	10.9	—	16.1*
1[b]	7.17	7.94	8.12	—	12.8

Silver-Palladium

Wt % Ag	273 K	293 K	300 K	350 K	400 K
99[b]	1.891	2.007	2.049	2.35	2.66
95[b]	3.58	3.70	3.74	4.04	4.34
90[b]	5.82	5.94	5.98	6.28	6.59
85[k]	7.92[*]	8.04[*]	8.08	8.38[*]	8.68[*]
80[k]	10.01	10.13	10.17	10.47	10.78
70[k]	14.53	14.65	14.69	14.99	15.30
60[i]	20.9	21.1	21.2	21.6	22.0
50[k]	31.2	31.4	31.5	32.0	32.4
40[m]	42.2	42.2	42.2	42.3	42.3
30[b]	40.4	40.6	40.7	41.3	41.7
25[k]	36.67[*]	37.06	37.19	38.1[*]	38.8[*]
15[i]	27.08[*]	26.68[*]	27.89[*]	29.3[*]	30.6[*]
10[i]	21.69	22.39	22.63	24.3	25.9
5[b]	15.98	16.72	16.98	18.8[*]	20.5[*]
1[a]	11.06	11.82	12.08[*]	13.92[*]	15.70[*]

[a] Uncertainty in resistivity is ± 2%.
[b] Uncertainty in resistivity is ± 3%.
[c] Uncertainty in resistivity is ± 5%.
[d] Uncertainty in resistivity is ± 7% below 300 K and ± 5% at 300 and 400 K.
[e] Uncertainty in resistivity is ± 7%.
[f] Uncertainty in resistivity is ± 8%.
[g] Uncertainty in resistivity is ± 10%.
[h] Uncertainty in resistivity is ± 12%.
[i] Uncertainty in resistivity is ± 4%.
[j] Uncertainty in resistivity is ± 1%.
[k] Uncertainty in resistivity is ± 3% up to 300 K and ± 4% above 300 K.
[m] Uncertainty in resistivity is ± 2% up to 300 K and ± 4% above 300 K.
[*] In temperature range where no experimental data are available.