

## **Electrical Conductivity of Materials**

<b>Material</b>	<b>Source</b>	<b>Conductivity % IACS</b>	<b>Conductivity MS/m</b>	<b>Resistivity ohm-m (E-08)</b>	<b>Min. Thickness * at 60KHz (inches)</b>	<b>Min. Thickness * at 500KHz (inches)</b>
Admiralty Brass	2	24.00	13.92	7.184	0.108	0.038
Graphite	1	0.22	0.13	783.700	1.131	0.392
Titanium, 6AL-4V	2	1.00	0.58	172.400	0.531	0.184
Hastelloy "B" and "C"	1	1.30	0.75	132.600	0.465	0.161
Hastelloy "A"	1	1.40	0.81	123.200	0.449	0.155
Waspaloy	2	1.40	0.81	123.200	0.449	0.155
Hastelloy "D"	1	1.50	0.87	114.900	0.433	0.150
Hastelloy "X"	2	1.50	0.87	114.900	0.433	0.150
Inconel 600	2	1.70	0.98	101.400	0.407	0.141
Inconel	1	1.76	1.02	97.960	0.400	0.139
Mercury	1	1.80	1.04	95.790	0.396	0.137
Titanium	1	2.20	1.27	78.370	0.358	0.124
Steel, 316 Stainless	1	2.30	1.33	74.960	0.350	0.121
Steel, 347 Stainless	1	2.40	1.39	71.840	0.343	0.119
Zircaloy-2	2	2.40	1.39	71.840	0.343	0.119
Steel, 304 Stainless	2	2.50	1.45	68.970	0.336	0.116
Steel, 304 Stainless	1	2.50	1.45	68.970	0.336	0.116
Steel, High Alloy	1	2.90	1.68	59.450	0.312	0.108
Titanium	2	3.10	1.79	55.620	0.301	0.104
Zirconium	2	3.40	1.97	50.710	0.288	0.100
Constantan	1	3.52	2.04	48.980	0.283	0.098
Monel	1	3.58	2.07	48.160	0.280	0.097
Monel	2	3.60	2.08	47.890	0.280	0.097
Platinum-Ruthenium (Contact Grade)	1	4.00	2.32	43.100	0.265	0.092
Zirconium	1	4.20	2.43	41.050	0.259	0.090
Antimony	1	4.40	2.55	39.180	0.253	0.088
Copper 70%, Nickel 30%	2	4.50	2.61	38.310	0.250	0.087
Cupro-Nickel 30%	1	4.60	2.67	37.480	0.247	0.086
Platinum-Iridium alloys, 18% Nickel Silver	1	5.20	3.01	33.160	0.233	0.081
Platinum-Ruthenium (Jewelery Grade)	1	5.50	3.19	31.350	0.226	0.078
Babbitt, Lead Base	1	6.00	3.48	28.740	0.217	0.075
Nickel, 18% Nickel sil	1	6.00	3.48	28.740	0.217	0.075
Silver, 18% Nickel Alloy A	1	6.00	3.48	28.740	0.217	0.075
Uranium	1	6.00	3.48	28.740	0.217	0.075

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Vanadium	1	6.60	3.83	26.120	0.207	0.072
Bronze, Silicon Type A (Annealed)	1	7.00	4.06	24.630	0.201	0.069
Nickel-Platinum Alloys	1	7.40	4.29	23.300	0.195	0.068
Lead, Hard (Quenched and Aged)	1	7.70	4.46	22.390	0.191	0.066
Antimonial Lead, 1% (Quenched and Aged)	1	7.88	4.57	21.880	0.189	0.065
Lead, 1% Antimonial (Quenched and Aged)	1	7.88	4.57	21.880	0.189	0.065
Corrodine Lead	1	8.30	4.81	20.770	0.184	0.064
Lead, Corrodine	1	8.30	4.81	20.770	0.184	0.064
Lead	2	8.40	4.87	20.530	0.183	0.063
Chromium	1	8.80	5.10	19.590	0.179	0.062
Solder, 5-95 Soft	1	8.80	5.10	19.590	0.179	0.062
Magnesium Cast Alloys	1	9.00	5.22	19.160	0.177	0.061
Platinum-Iridium Alloys	1	9.10	5.28	18.950	0.176	0.061
Solder, 20-80 Soft	1	9.80	5.68	17.590	0.170	0.059
Steel, Cast	1	10.70	6.20	16.110	0.162	0.056
Magnesium, AZ80BTA	1	10.80	6.26	15.960	0.161	0.056
Bronze, Phos.	2	11.00	6.38	15.670	0.160	0.055
Bronze, Lead Tin Bearing	1	11.00	6.38	15.670	0.160	0.055
Bronze, Phos., 10% Phos. Grade D	1	11.00	6.38	15.670	0.160	0.055
Solder, 50-50 soft	1	11.00	6.38	15.670	0.160	0.055
White Metal	1	11.10	6.43	15.530	0.159	0.055
Platinum, Commercial	1	11.60	6.73	14.860	0.156	0.054
Antimonial Tin solder	1	11.90	6.90	14.490	0.154	0.053
Solder, Antimonial Tin	1	11.90	6.90	14.490	0.154	0.053
Brass, High Strength Yellow	1	12.00	6.96	14.370	0.153	0.053
Bronze, Silicon Type B (Annealed)	1	12.00	6.96	14.370	0.153	0.053
Magnesium, A261	1	12.30	7.13	14.020	0.151	0.052
Magnesium, T454	1	12.50	7.25	13.790	0.150	0.052
Aluminum-Bronze, 10% Aluminum (Annealed)	1	12.60	7.30	13.680	0.149	0.052
Bronze aluminum, 10% Aluminum (Annealed)	1	12.60	7.31	13.680	0.149	0.052
Magnesium, A251	1	12.80	7.42	13.470	0.148	0.051
Bronze, Phos., 8% Phos. Grade C	1	13.00	7.54	13.260	0.147	0.051
Columbium	1	13.20	7.66	13.060	0.146	0.051
Nickel-Platinum Alloys	1	13.60	7.88	12.680	0.144	0.050
Tantalum	1	13.90	8.06	12.400	0.142	0.049
Aluminum-Bronze	1	14.00	8.12	12.320	0.142	0.049
Bronze Aluminum	1	14.00	8.12	12.320	0.142	0.049

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Bronze, Leaded Tin	1	14.00	8.12	12.320	0.142	0.049
Selenium	1	14.40	8.35	11.970	0.140	0.048
Magnesium, A2 80	1	14.60	8.47	11.810	0.139	0.048
Magnesium Alloys (Cast)	1	15.00	8.70	11.490	0.137	0.047
Tin, Pure	1	15.00	8.70	11.490	0.137	0.047
Ingot Iron (99.9% Fe)	1	15.60	9.05	11.050	0.134	0.047
Palladium	1	16.00	9.28	10.780	0.133	0.046
Platinum	1	16.28	9.44	10.590	0.132	0.046
Solder, Tin silver	1	16.90	9.63	10.390	0.130	0.045
Beryllium copper, Cond. A	1	17.00	9.86	10.140	0.129	0.045
Magnesium, A231	1	17.20	9.98	10.020	0.128	0.044
Aluminum-Bronze, 5% Aluminum (Annealed)	1	17.50	10.15	9.852	0.127	0.044
Bronze aluminum, 5% Aluminum (Annealed)	1	17.50	10.15	9.852	0.127	0.044
Brass, Leaded Semi Red	1	18.00	10.44	9.579	0.125	0.043
Bronze, Phos., 5% Phos. Grade A	1	18.00	10.44	9.579	0.125	0.043
Iron	2	18.00	10.44	9.579	0.125	0.043
Nickel "A"	1	18.00	10.44	9.579	0.125	0.043
Osmium	1	18.20	10.56	9.473	0.124	0.043
Lithium	1	20.2	11.72	8.535	0.118	0.041
Aluminum Alloy, 220	1	21.00	12.18	8.210	0.116	0.040
Beryllium copper, Cond. At	1	21.00	12.18	8.210	0.116	0.040
Ruthenium	1	22.70	13.17	7.595	0.111	0.039
Aluminum Brass (Annealed)	1	23.00	13.34	7.496	0.111	0.038
Brass, Aluminum (Annealed)	1	23.00	13.34	7.496	0.111	0.038
Aluminum Alloy, 218	1	24.00	13.92	7.184	0.108	0.038
Brass, Admiralty	2	24.00	13.92	7.184	0.108	0.038
Bronze Manganese (Annealed)	1	24.00	13.92	7.184	0.108	0.038
Admiralty Metal (annealed)	1	24.60	14.27	7.009	0.107	0.037
Brass, Leaded Yellow	1	25.00	14.50	6.897	0.106	0.037
Zinc, Die Cast	1	25.00	14.50	6.897	0.106	0.037
Cadmium	1	25.20	14.62	6.842	0.106	0.037
Nickel, Pure (Electrolytic)	1	25.20	14.62	6.842	0.106	0.037
Aluminum Alloy, Red X-8 As Cast	1	26.00	15.08	6.631	0.104	0.036
Brass, Leaded Naval (Annealed)	1	26.00	15.08	6.631	0.104	0.036
Brass, Low Leaded (Annealed)	1	26.00	15.08	6.631	0.104	0.036
Brass, Naval (Annealed)	1	26.00	15.08	6.631	0.104	0.036
Aluminum Allcast, as cast	1	27.00	15.66	6.386	0.102	0.035

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Aluminum Alloy, C113	1	27.00	15.66	6.386	0.102	0.035
Aluminum Alloy, 319 Sand	1	27.00	15.66	6.386	0.102	0.035
Aluminum Alloy, 380	1	27.00	15.66	6.386	0.102	0.035
Aluminum, 56S Cond. H 38	1	27.00	15.66	6.386	0.102	0.035
Brass, Yellow (Annealed)	1	27.00	15.66	6.386	0.102	0.035
Zinc, Die Cast	1	27.00	15.66	6.386	0.102	0.035
Cobalt	1	27.60	16.01	6.247	0.101	0.035
Aluminum Alloy, 319 Perm. Mold	1	28.00	16.24	6.158	0.100	0.035
Aluminum Alloy, 85	1	28.00	16.24	6.158	0.100	0.035
Brass, Cartridge (Annealed)	1	28.00	16.24	6.158	0.100	0.035
Muntz Metal (Annealed)	1	28.00	16.24	6.158	0.100	0.035
Zinc, Commercial Rolled	1	28.00	16.24	6.158	0.100	0.035
Aluminum Alloy, A 132 Cond. T551	1	29.00	16.82	5.945	0.099	0.034
Aluminum, Red X-8 Cond. Stress Relieved	1	29.00	16.82	5.945	0.099	0.034
Aluminum, 56S Cond. "0"	1	29.00	16.82	5.945	0.099	0.034
Zinc	2	29.00	16.82	5.945	0.099	0.034
Aluminum Allcast, Sol H.T. and Aged	1	30.00	17.40	5.747	0.097	0.034
Aluminum Allcast, Stress Relieved	1	30.00	17.40	5.747	0.097	0.034
Aluminum Alloy, R 317	1	30.00	17.40	5.747	0.097	0.034
Aluminum Alloy, 113	1	30.00	17.40	5.747	0.097	0.034
Aluminum, 17S Cond. T4	1	30.00	17.40	5.747	0.097	0.034
Aluminum, 24S Cond. T4	1	30.00	17.40	5.747	0.097	0.034
Aluminum, 75S Cond. T6	1	30.00	17.40	5.747	0.097	0.034
Aluminum Alloy, 108	1	31.00	17.98	5.526	0.095	0.033
Tungsten	1	31.40	18.21	5.491	0.095	0.033
Aluminum Alloy, 142 Perm. Mold Cond. T61	1	32.00	18.56	5.388	0.094	0.032
Aluminum Alloy 7075-T6	2	32.00	18.56	5.388	0.094	0.032
Brass, Low (Annealed)	1	32.00	18.56	5.388	0.094	0.032
Aluminum Alloy, A214	1	33.00	19.14	5.225	0.092	0.032
Aluminum Alloy, 122 Sand Cond. T61	1	33.00	19.14	5.225	0.092	0.032
Molybdenum	1	33.00	19.14	5.225	0.092	0.032
Aluminum Alloy, 122 Perm. Mold As Cast	1	34.00	19.72	5.071	0.091	0.032
Aluminum Alloy, 142 Sand Cond. T571	1	34.00	19.72	5.071	0.091	0.032
Magnesium, Wrought Alloys	1	34.50	20.01	4.998	0.090	0.031
Aluminum Alloy, B 195 Cond. T4	1	35.00	20.30	4.926	0.090	0.031
Aluminum Alloy, 195 Cond. T4	1	35.00	20.30	4.926	0.090	0.031
Aluminum Alloy, 214	1	35.00	20.30	4.926	0.090	0.031

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Aluminum Alloy, 40E	1	35.00	20.30	4.926	0.090	0.031
Aluminum 32S Cond. T6	1	35.00	20.30	4.926	0.090	0.031
Aluminum, 52S Cond. "0" and H 38	1	35.00	20.30	4.926	0.090	0.031
Aluminum Allcast, Cond. Sol. H.T and Stress Rel.	1	36.00	20.88	4.789	0.088	0.031
Aluminum Alloy, B 196 Cond. T6	1	36.00	20.88	4.789	0.088	0.031
Aluminum Alloy, 355 Sand Cond. T6	1	36.00	20.88	4.789	0.088	0.031
Aluminum Alloy, A 108	1	37.00	21.46	4.660	0.087	0.030
Aluminum Alloy, 142 Sand cond. T77	1	37.00	21.46	4.660	0.087	0.030
Aluminum Alloy, 195 Cond. T62	1	37.00	21.46	4.660	0.087	0.030
Aluminum Alloy, 355 Sand Cond. T61	1	37.00	21.46	4.660	0.087	0.030
Aluminum Alloy, 360	1	37.00	21.46	4.660	0.087	0.030
Aluminum Alloy, 43 AS Cast	1	37.00	21.46	4.660	0.087	0.030
Brass, Red (Annealed)	1	37.00	21.46	4.660	0.087	0.030
Magnesium	2	37	21.46	4.660	0.087	0.030
Aluminum Alloy, 2218-T61	3	37.40	21.69	4.610	0.087	0.030
Rhodium	1	38.40	22.27	4.490	0.086	0.030
Magnesium, Pure	1	38.60	22.39	4.467	0.085	0.030
Aluminum Alloy, 13	1	39.00	22.62	4.421	0.085	0.029
Aluminum Alloy, 355 Perm. Mold Cond. T6	1	39.00	22.62	4.421	0.085	0.029
Aluminum Alloy, 356 Sand Cond. T6	1	39.00	22.62	4.421	0.085	0.029
Aluminum, 11S Cond. T3	1	40.00	23.20	4.310	0.084	0.029
Aluminum, 14S Cond. T6	1	40.00	23.20	4.310	0.084	0.029
Aluminum, 18S Cond. T61	1	40.00	23.20	4.310	0.084	0.029
Aluminum, 24S Cond. T6	1	40.00	23.20	4.310	0.084	0.029
Aluminum, 3S Cond. H18	1	40.00	23.20	4.310	0.084	0.029
Aluminum, 32S Cond. "0"	1	40.00	23.20	4.310	0.084	0.029
Aluminum 53S cond. T4 and T6	1	40.00	23.20	4.310	0.084	0.029
Aluminum, 61S Cond. T4 and T6	1	40.00	23.20	4.310	0.084	0.029
Aluminum Alloy, 2618	3	40.20	23.32	4.289	0.084	0.029
Aluminum Alloy, 122 Sand Cond. T2	1	41.00	23.78	4.205	0.083	0.029
Aluminum, 3S cond. H 14	1	41.00	23.78	4.205	0.083	0.029
Aluminum Alloy, 355 Sand Cond. T7	1	42.00	24.36	4.105	0.082	0.028
Aluminum Alloy,43 (annealed)	1	42.00	24.36	4.105	0.082	0.028
Aluminum, 3S Cond. H 12	1	42.00	24.36	4.105	0.082	0.028
Bronze, Commercial Lead	1	42.00	24.36	4.105	0.082	0.028
Aluminum Alloy, 355 Sand Cond. T51	1	43.00	24.94	4.010	0.081	0.028
Aluminum Alloy, 356 Sand Cond. T51	1	43.00	24.94	4.010	0.081	0.028

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Beryllium	1	43.10	25.00	4.000	0.081	0.028
Aluminum Alloy, 142 Sand Cond. T21	1	44.00	25.52	3.918	0.080	0.028
Bronze, Commercial (Annealed)	1	44.00	25.52	3.918	0.080	0.028
Aluminum Alloy, 750	1	45.00	26.10	3.831	0.079	0.027
Aluminum, A51S Cond. T4 and T6	1	45.00	26.10	3.831	0.079	0.027
Aluminum, 17S Cond. "0"	1	45.00	26.10	3.831	0.079	0.027
Aluminum 53S Cond. "0"	1	45.00	26.10	3.831	0.079	0.027
Aluminum, 61S Cond. "0"	1	45.00	26.10	3.831	0.079	0.027
Bronze, Phos., 1.25% Phos. Grade E	1	48.00	27.84	3.592	0.077	0.027
Calcium	1	48.70	28.25	3.540	0.076	0.026
Aluminum, 14S Cond. "0"	1	50.00	29.00	3.448	0.075	0.026
Aluminum, 18S Cond. "0"	1	50.00	29.00	3.448	0.075	0.026
Aluminum, 24S Cond. "0"	1	50.00	29.00	3.448	0.075	0.026
Aluminum, 3S Cond. "0"	1	50.00	29.00	3.448	0.075	0.026
Aluminum, A51S Cond. "0"	1	55.00	31.90	3.135	0.072	0.025
Gilding Metal (Annealed)	1	56.00	32.48	3.079	0.071	0.025
Aluminum, 2S Cond. H18	1	57.00	33.06	3.025	0.070	0.024
Aluminum, 2S Cond. "0"	1	59.00	34.22	2.922	0.069	0.024
Aluminum, Pure	2	61.00	35.38	2.826	0.068	0.024
Aluminum, 99.99%	1	64.94	37.67	2.655	0.066	0.023
Gold, Pure	2	70.00	40.60	2.463	0.063	0.022
Gold	1	73.40	42.57	2.349	0.062	0.021
Copper, Deoxidized (Annealed)	1	85.00	49.30	2.028	0.058	0.020
Copper, Pure	2	100.00	58.00	1.724	0.053	0.018
Copper, Electrolytic Tough Pitch (Annealed)	1	101.00	58.58	1.707	0.053	0.018
Copper, Pure	1	103.60	60.09	1.664	0.052	0.018
Silver, Pure	2	105.00	60.90	1.642	0.052	0.018
Silver, Pure	1	108.40	62.87	1.591	0.051	0.018
Aluminum Alloy, X7178-W and T6	3	26.80–32.60	17.23	5.805	0.097	0.034
Aluminum Alloy, 7075-W	3	27.00–37.00	18.56	5.388	0.094	0.032
Aluminum Alloy, 5056	3	28.10–29.80	16.79	5.956	0.099	0.034
Aluminum Alloy, 2024-T3	3	28.60–36.10	18.76	5.330	0.093	0.032
Aluminum Alloy, 2024-T4	3	28.80–31.00	17.34	5.766	0.097	0.034
Aluminum Alloy, 2024-T36	3	29.10–29.50	16.99	5.884	0.098	0.034
Aluminum Alloy, 5154	3	30.50–32.80	18.36	5.448	0.094	0.033
Aluminum Alloy, 7075-T6	3	31.40–34.80	19.20	5.209	0.092	0.032
Aluminum Alloy, 2014-T3 and -T4	3	32.50–34.80	19.52	5.124	0.091	0.032

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Aluminum Alloy, 5052	3	33.60–37.60	20.65	4.843	0.089	0.031
Aluminum Alloy, 4032-T6	3	35.30–36.30	20.76	4.816	0.089	0.031
Aluminum Alloy, 2011-T3	3	36.00–36.50	21.03	4.756	0.088	0.031
Aluminum Alloy, 6061 T4	3	37.60–40.50	22.65	4.415	0.085	0.029
Aluminum Alloy, 3003-H24 and -H28	3	37.80–47.50	24.74	4.043	0.081	0.028
Aluminum Alloy, 3003-H14 and -H12	3	37.80–51.50	25.90	3.861	0.079	0.028
Aluminum Alloy, 2014-T6	3	38.00–39.70	22.53	4.438	0.085	0.029
Aluminum Alloy, 6053	3	39.30–48.00	25.32	3.950	0.080	0.028
Aluminum Alloy, 3004	3	39.40–43.50	24.04	4.160	0.082	0.029
Aluminum Alloy, 6061-T6 and -T9	3	40.00–44.80	24.59	4.066	0.081	0.028
Aluminum Alloy, 6151-T4	3	41.50–43.30	24.59	4.066	0.081	0.028
Aluminum Alloy, 2127-T4	3	42.10–42.40	24.51	4.081	0.082	0.028
Aluminum Alloy, 5357	3	42.30–47.00	25.90	3.861	0.079	0.028
Aluminum Alloy, 6061-F and -0	3	42.30–48.50	26.33	3.798	0.079	0.027
Aluminum Alloy, 6062-T4	3	43.50–44.00	25.38	3.941	0.080	0.028
Aluminum Alloy, 6151-T6	3	43.90–45.00	25.78	3.879	0.080	0.028
Aluminum Alloy, 7075-F	3	44.50–47.80	26.77	3.736	0.078	0.027
Aluminum Alloy, 6062-T6	3	44.70–49.50	27.32	3.661	0.077	0.027
Aluminum Alloy, 3003-0	3	44.70–49.80	27.41	3.649	0.077	0.027
Aluminum Alloy, X7178-F and -0	3	45.50–46.00	26.54	3.769	0.078	0.027
Aluminum Alloy, 2024-F	3	46.80–48.50	27.64	3.618	0.077	0.027
Aluminum Alloy, 6062-F	3	47.00–51.00	28.42	3.519	0.076	0.026
Aluminum Alloy, 5050	3	48.30–49.80	28.45	3.515	0.076	0.026
Aluminum Alloy, 2014-F and -0	3	48.60–50.70	28.80	3.473	0.075	0.026
Aluminum Alloy, 2017-F	3	49.30–49.50	28.65	3.490	0.076	0.026
Aluminum Alloy, X3005-0	3	50.10–50.30	29.12	3.435	0.075	0.026
Aluminum Alloy, 5005	3	52.30–52.80	30.48	3.281	0.073	0.025
Aluminum Alloy, 4043-F	3	52.30–54.30	30.91	3.235	0.073	0.025
Aluminum Alloy, 6951-F	3	53.00–53.10	30.77	3.250	0.073	0.025
Aluminum Alloy, 6151-0	3	53.30–55.00	31.41	3.184	0.072	0.025
Aluminum Alloy, 6951-0	3	55.70–56.50	32.54	3.073	0.071	0.025
Aluminum Alloy, 1100	3	57.00–61.80	34.45	2.903	0.069	0.024
Aluminum Alloy, 7072	3	60.00–60.10	34.83	2.871	0.068	0.024

### **Source Code**

1=CSNDT

2=Eddy Current Testing Manual on Eddy Current Method