

ALLOY 30 RESISTANCE

NICKEL COPPER

ASTM: B267	UNS: C70201
Ω/cir. mil. ft.: 30	Weight/Density: .31 lbs/in ² (8.9 g/cm ³)
Chemical Composition %: Ni 2%, Cu Balance	Conductivity: 116 w/mK
Temp. Coeff. of Resistance: 0.0013	Specific Gravity: 8.92
Coeff. of Lin. Expansion, X 10⁻⁶: 16.5 (20-100°C)	Specific Heat: .092 cal./gm @ 20°C
Melting Point: ~1,100°C (~2,012°F)	Elongation: 15-30%
Max Operating Temp: ~600°C (~1,112°F)	Yield Point:
Soft Tensile: 25,000-40,000 PSI	

B&S	Diameter		Resistance @ 68° F/20° C Ω/ft	Sq. in./Ω 68°F	Weight Lb./1000 ft	Ω/lb.	Ft/Lb.	Cross sectional area (in ²)
	Inches	Mm						
13	0.072	1.83	0.006	469.0	15.7	0.37	63.79	0.00407
14	0.064	1.63	0.007	329.4	12.4	0.59	80.62	0.00322
15	0.057	1.45	0.009	232.7	9.86	0.94	101.4	0.00256
16	0.051	1.29	0.012	166.7	7.82	1.48	127.9	0.00203
17	0.045	1.15	0.015	114.5	6.20	2.39	161.2	0.00161
18	0.04	1.02	0.019	80.42	4.85	3.86	206.0	0.00126
19	0.036	0.912	0.023	58.63	3.93	5.89	254.5	0.00102
20	0.032	0.812	0.029	41.18	3.10	9.46	322.9	0.000804
21	0.0285	0.723	0.037	29.09	2.46	15.03	406.9	0.000638
22	0.0253	0.644	0.047	20.35	1.95	24.00	512.0	0.000507
23	0.0226	0.573	0.059	14.51	1.54	38.03	647.4	0.000401
24	0.0201	0.51	0.074	10.20	1.21	61.39	826.8	0.000314
25	0.0179	0.455	0.094	7.207	0.978	95.70	1,022	0.000254
26	0.0159	0.405	0.119	5.037	0.767	155.2	1,305	0.000199
27	0.0142	0.361	0.148	3.617	0.609	243.2	1,643	0.000158
28	0.0126	0.321	0.189	2.513	0.482	392.5	2,077	0.000125
29	0.0113	0.286	0.243	1.753	0.385	630.8	2,596	0.000100
30	0.01	0.255	0.300	1.257	0.302	992.1	3,307	0.0000785
31	0.0089	0.227	0.387	0.867	0.241	1,605	4,147	0.0000626
32	0.008	0.202	0.469	0.643	0.191	2,455	5,234	0.0000496
33	0.0071	0.18	0.595	0.450	0.152	3,920	6,589	0.0000394
34	0.0063	0.16	0.755	0.315	0.120	6,282	8,321	0.0000312
35	0.0056	0.143	0.956	0.221	0.0951	10,048	10,510	0.0000247
36	0.005	0.127	1.200	0.1571	0.0755	15,894	13,245	0.0000196
37	0.0045	0.113	1.490	0.1139	0.0586	25,448	17,079	0.0000152
38	0.004	0.101	1.870	0.0806	0.0485	38,529	20,604	0.0000126
39	0.0035	0.09	2.440	0.0541	0.0377	64,702	26,517	0.00000979
40	0.0031	0.08	3.122	0.0374	0.0300	104,034	33,325	0.00000779
41	0.00275	0.07	3.967	0.0261	0.0237	167,182	42,144	0.00000616
42	0.0025	0.063	4.800	0.01963	0.0188	255,874	53,307	0.00000487
43	0.00225	0.057	5.926	0.01431	0.0146	404,843	68,317	0.00000380
44	0.0020	0.051	7.500	0.01005	0.0121	620,077	82,677	0.00000314
45	0.00175	0.044	9.796	0.00673	0.0094	1,046,532	106,833	0.00000243
46	0.0015	0.038	13.333	0.00424	0.0077	1,722,092	129,157	0.00000201
47	0.0014	0.036	15.306	0.00345	0.0059	2,580,229	168,575	0.00000154
48	0.0013	0.033	17.751	0.00276	0.0047	3,808,578	214,550	0.00000121

ALLOY 60 PRECISION RESISTANCE

NICKEL COPPER

ASTM:	UNS: C70500
Ω/cir. mil. ft.: 60	Weight/Density: .321 lbs/in² (8.9 g/cm³)
Chemical Composition %: Ni 6.0%, Cu-Balance	Conductivity: 91 w/mK
Temp. Coeff. of Resistance: 0.0005	Specific Gravity: 8.92
Coeff. of Lin. Expansion, X 10⁻⁶: 16 (20-500°C)	Specific Heat: .092 cal./gm @ 20°C
Melting Point: ~1,100°C (~2,012°F)	Elongation: 15-30%
Max Operating Temp: ~600°C (~1,112°F)	Yield Point: 15,000-35,000
Soft Tensile: 30,000-50,000 PSI	

Diameter			Resistance @ 68° F/20° C Ω/ft	Sq. in./Ω 68°F	Weight Lb./1000 ft	Ω/lb.	Ft/Lb.	Cross sectional area (in ²)
B&S	Inches	Mm						
13	0.072	1.83	0.012	234.5	15.7	0.74	63.75	0.00407
14	0.064	1.63	0.015	164.7	12.4	1.18	80.58	0.00322
15	0.057	1.45	0.018	116.4	9.87	1.87	101.4	0.00256
16	0.051	1.29	0.023	83.35	7.82	2.95	127.8	0.00203
17	0.045	1.15	0.030	57.26	6.21	4.78	161.2	0.00161
18	0.04	1.02	0.038	40.21	4.86	7.72	205.9	0.00126
19	0.036	0.912	0.046	29.31	3.93	11.78	254.4	0.00102
20	0.032	0.812	0.059	20.59	3.10	18.87	322.0	0.000804
21	0.0285	0.723	0.074	14.55	2.46	29.99	406.0	0.000638
22	0.0253	0.644	0.094	10.18	1.94	48.27	515.0	0.000507
23	0.0226	0.573	0.117	7.253	1.54	75.89	646.0	0.000401
24	0.0201	0.51	0.149	5.102	1.21	122.5	825.0	0.000314
25	0.0179	0.455	0.187	3.604	0.971	192.7	1,029	0.000254
26	0.0159	0.405	0.237	2.526	0.766	310.0	1,305	0.000199
27	0.0142	0.361	0.298	1.799	0.611	485.0	1,636	0.000158
28	0.0126	0.321	0.378	1.257	0.481	783.0	2,078	0.000125
29	0.0113	0.286	0.470	0.907	0.386	1,216	2,584	0.000100
30	0.01	0.255	0.600	0.628	0.303	1,980	3,300	0.0000785
31	0.0089	0.227	0.757	0.443	0.240	3,153	4,166	0.0000626
32	0.008	0.202	0.938	0.322	0.193	4,831	5,156	0.0000496
33	0.0071	0.18	1.190	0.225	0.152	7,789	6,546	0.0000394
34	0.0063	0.16	1.512	0.157	0.120	12,554	8,314	0.0000312
35	0.0056	0.143	1.913	0.110	0.0950	20,097	10,522	0.0000247
36	0.005	0.127	2.400	0.0785	0.0750	31,680	13,200	0.0000196
37	0.0045	0.113	2.963	0.0573	0.0610	48,236	16,296	0.0000152
38	0.004	0.101	3.750	0.0402	0.0480	77,343	20,625	0.0000126
39	0.0035	0.09	4.898	0.0269	0.0370	131,726	26,938	0.00000979
40	0.0031	0.08	6.243	0.0187	0.0290	214,275	34,339	0.00000779
41	0.00275	0.07	7.934	0.0131	0.0237	334,185	42,121	0.00000616
42	0.0025	0.063	9.600	0.00982	0.0188	511,474	53,279	0.00000487
43	0.00225	0.057	11.85	0.00716	0.0146	809,253	68,281	0.00000380
44	0.0020	0.051	15.00	0.00503	0.0121	1,239,490	82,633	0.00000314
45	0.00175	0.044	19.59	0.00337	0.0094	2,091,946	106,776	0.00000243
46	0.0015	0.038	26.67	0.00212	0.0077	3,442,344	129,088	0.00000201
47	0.0014	0.036	30.61	0.00172	0.0059	5,157,699	168,485	0.00000154
48	0.0013	0.033	35.50	0.00138	0.0047	7,613,086	214,435	0.00000121

ALLOY 90 PRECISION RESISTANCE

NICKEL COPPER

ASTM: B267	UNS: C70700
Ω/cir. mil. ft.: 90	Weight/Density: .323 lbs/in ² (8.9 g/cm ³)
Chemical Composition %: Ni 10%, Cu-Balance	Conductivity: 60 w/mK
Temp. Coeff. of Resistance: 0.0004	Specific Gravity: 8.90
Coeff. of Lin. Expansion, X 10⁻⁶: 16.5 (200°C), 17.5 (400°C), 18.5 (600°C), 19.5 (800°C)	
Specific Heat: .092 cal./gm @ 20°C	Elongation: 15-30%
Melting Point: ~1,100°C (~2,012°F)	Yield Point: 15,000-35,000
Max Operating Temp: ~425°C (~800°F)	Soft Tensile: 39,000-51,000 PSI

Diameter			Resistance @ 68° F/20° C Ω/ft	Sq. in./Ω 68°F	Weight Lb./1000 ft	Ω/lb.	Ft/Lb.	Cross sectional area (in ²)
B&S	Inches	Mm						
13	0.072	1.83	0.017	156.3	15.8	1.10	63.39	0.00407
14	0.064	1.63	0.022	109.8	12.5	1.76	80.12	0.00322
15	0.057	1.45	0.028	77.57	9.92	2.79	100.8	0.00256
16	0.051	1.29	0.035	55.56	7.87	4.40	127.1	0.00203
17	0.045	1.15	0.044	38.17	6.24	7.12	160.2	0.00161
18	0.04	1.02	0.056	26.81	4.88	11.52	204.8	0.00126
19	0.036	0.912	0.069	19.54	3.95	17.57	252.9	0.00102
20	0.032	0.812	0.088	13.73	3.12	28.10	320.0	0.000804
21	0.0285	0.723	0.111	9.697	2.47	44.70	403.0	0.000638
22	0.0253	0.644	0.141	6.783	1.97	71.10	512.0	0.000507
23	0.0226	0.573	0.176	4.835	1.55	112.0	641.0	0.000401
24	0.0201	0.51	0.223	3.402	1.22	182.0	819.0	0.000314
25	0.0179	0.455	0.281	2.402	0.985	287.0	1,023	0.000254
26	0.0159	0.405	0.356	1.684	0.771	461.0	1,296	0.000199
27	0.0142	0.361	0.446	1.199	0.612	724.0	1,625	0.000158
28	0.0126	0.321	0.567	0.838	0.485	1,174	2,071	0.000125
29	0.0113	0.286	0.705	0.604	0.388	1,809	2,567	0.000100
30	0.01	0.255	0.900	0.419	0.304	2,950	3,278	0.0000785
31	0.0089	0.227	1.136	0.295	0.243	4,717	4,138	0.0000626
32	0.008	0.202	1.406	0.214	0.192	7,226	5,121	0.0000496
33	0.0071	0.18	1.785	0.150	0.153	11,573	6,502	0.0000394
34	0.0063	0.16	2.268	0.105	0.121	18,747	8,259	0.0000312
35	0.0056	0.143	2.870	0.074	0.0957	29,997	10,452	0.0000247
36	0.005	0.127	3.600	0.0524	0.0760	47,203	13,112	0.0000196
37	0.0045	0.113	4.444	0.0382	0.0589	71,870	16,187	0.0000152
38	0.004	0.101	5.625	0.0268	0.0488	115,136	20,487	0.0000126
39	0.0035	0.09	7.347	0.0180	0.0379	153,824	26,759	0.00000979
40	0.0031	0.08	9.365	0.0125	0.0302	319,269	34,110	0.00000779
41	0.00275	0.07	11.90	0.0087	0.0239	498,440	41,883	0.00000616
42	0.0025	0.063	14.40	0.00654	0.0189	762,869	52,977	0.00000487
43	0.00225	0.057	17.78	0.00477	0.0147	1,207,008	67,894	0.00000380
44	0.0020	0.051	22.50	0.00335	0.0122	1,848,711	82,165	0.00000314
45	0.00175	0.044	29.39	0.00224	0.0094	3,120,156	106,172	0.00000243
46	0.0015	0.038	40.00	0.00141	0.0078	5,134,287	128,357	0.00000201
47	0.0014	0.036	45.92	0.00115	0.0060	7,692,756	167,531	0.00000154
48	0.0013	0.033	53.25	0.00092	0.0047	11,354,988	213,221	0.00000121

ALLOY 180 PRECISION RESISTANCE

NICKEL COPPER

ASTM: B267	UNS: C71100
Ω/cir. mil. ft.: 180	Weight/Density: .322 lbs/in ² (8.9 g/cm ³)
Chemical Composition %: Ni 23%, Cu-Balance	Conductivity: 35 w/mK
Temp. Coeff. of Resistance: 0.00013	Specific Gravity: 8.90
Coeff. of Lin. Expansion, X 10⁻⁶: 15.9 (20-500°C)	Specific Heat: .092 cal./gm @ 20°C
Melting Point: ~1,100°C (~2,012°F)	Elongation: 20-40%
Max Operating Temp: ~540°C (~1,004°F)	Yield Point: 20,000-40,000 PSI
Soft Tensile: 60,000-70,000 PSI	

Diameter			Resistance @ 68° F/20° C Ω/ft	Sq. in./Ω 68°F	Weight Lb./1000 ft	Ω/lb.	Ft/Lb.	Cross sectional area (in ²)
B&S	Inches	Mm						
13	0.072	1.83	0.035	78.17	15.7	2.21	63.59	0.00407
14	0.064	1.63	0.044	54.90	12.4	3.53	80.37	0.00322
15	0.057	1.45	0.055	38.79	9.89	5.60	101.1	0.00256
16	0.051	1.29	0.069	27.78	7.84	8.82	127.5	0.00203
17	0.045	1.15	0.089	19.09	6.22	14.29	160.7	0.00161
18	0.04	1.02	0.113	13.40	4.87	23.11	205.4	0.00126
19	0.036	0.912	0.139	9.772	3.94	35.24	253.7	0.00102
20	0.032	0.812	0.176	6.863	3.11	56.20	320.0	0.000804
21	0.0285	0.723	0.222	4.848	2.47	89.30	403.0	0.000638
22	0.0253	0.644	0.281	3.392	1.96	143.9	512.0	0.000507
23	0.0226	0.573	0.352	2.418	1.55	225.0	641.0	0.000401
24	0.0201	0.51	0.446	1.701	1.21	368.0	819.0	0.000314
25	0.0179	0.455	0.562	1.201	0.981	574.0	1,023	0.000254
26	0.0159	0.405	0.712	0.842	0.769	922.0	1,296	0.000199
27	0.0142	0.361	0.893	0.600	0.611	1,450	1,625	0.000158
28	0.0126	0.321	1.134	0.419	0.483	2,347	2,071	0.000125
29	0.0113	0.286	1.410	0.302	0.386	3,610	2,567	0.000100
30	0.01	0.255	1.800	0.209	0.303	5,900	3,278	0.0000785
31	0.0089	0.227	2.272	0.148	0.242	9,400	4,138	0.0000626
32	0.008	0.202	2.813	0.107	0.192	14,400	5,121	0.0000496
33	0.0071	0.18	3.57	0.075	0.152	23,216	6,502	0.0000394
34	0.0063	0.16	4.54	0.052	0.121	37,450	8,259	0.0000312
35	0.0056	0.143	5.74	0.037	0.0954	59,990	10,452	0.0000247
36	0.005	0.127	7.20	0.0262	0.0757	94,400	13,112	0.0000196
37	0.0045	0.113	8.89	0.0191	0.0587	143,880	16,187	0.0000152
38	0.004	0.101	11.25	0.0134	0.0487	230,470	20,487	0.0000126
39	0.0035	0.09	14.69	0.0090	0.0378	393,160	26,759	0.00000979
40	0.0031	0.08	18.73	0.0062	0.0301	638,880	34,110	0.00000779
41	0.00275	0.07	23.80	0.0044	0.0238	999,975	42,013	0.00000616
42	0.0025	0.063	28.80	0.00327	0.0188	1,530,476	53,142	0.00000487
43	0.00225	0.057	35.56	0.00239	0.0147	2,421,513	68,105	0.00000380
44	0.0020	0.051	45.00	0.00168	0.0121	3,708,905	82,420	0.00000314
45	0.00175	0.044	58.78	0.00112	0.0094	6,259,693	106,502	0.00000243
46	0.0015	0.038	80.00	0.00071	0.0078	10,300,465	128,756	0.00000201
47	0.0014	0.036	91.84	0.00057	0.0060	15,433,293	168,051	0.00000154
48	0.0013	0.033	106.51	0.00046	0.0047	22,780,503	213,884	0.00000121

ALLOY 300 PRECISION RESISTANCE

NICKEL COPPER

ASTM: B267	DIN: 17471/17664/46464	UNS: C72150
Ω/cir. mil. ft.: 294	Weight/Density: .321 lbs/in ² (8.9 g/cm ³)	
Chemical Composition %: Ni 45%, Cu 55%	Conductivity: 21 w/mK	
Temp. Coeff. of Resistance: 0.00002	Specific Gravity: 8.90	
Coeff. of Lin. Expansion, X 10⁻⁶: 13.5(100°C), 14.0(200°C), 14.5(300°C), 15.0 (400°C), 16.0 (500°C)		
Specific Heat: .094 cal./gm @ 20°C	Elongation: 20-40%	
Melting Point: ~1,280°C (~2,336°F)	Yield Point: 20,000-40,000 PSI	
Max Operating Temp: ~550°C (~1,020°F)	Soft Tensile: 60,000-90,000 PSI	

Diameter			Resistance @ 68° F/20° C Ω/ft	Sq. in./Ω 68°F	Weight Lb./1000 ft	Ω/lb.	Ft/Lb.	Cross sectional area (in ²)
B&S	Inches	Mm						
13	0.072	1.83	0.057	47.86	15.7	3.62	63.79	0.00407
14	0.064	1.63	0.072	33.61	12.4	5.79	80.62	0.00322
15	0.057	1.45	0.090	23.75	9.86	9.18	101.4	0.00256
16	0.051	1.29	0.113	17.01	7.82	14.5	127.9	0.00203
17	0.045	1.15	0.145	11.68	6.20	23.4	161.2	0.00161
18	0.04	1.02	0.184	8.207	4.85	37.9	206.0	0.00126
19	0.036	0.912	0.227	5.983	3.93	57.7	254.5	0.00102
20	0.032	0.812	0.287	4.202	3.10	92.7	322.9	0.000804
21	0.0285	0.723	0.362	2.969	2.46	146.0	406.9	0.000638
22	0.0253	0.644	0.459	2.078	1.95	234.0	512.0	0.000507
23	0.0226	0.573	0.576	1.480	1.54	371.0	647.4	0.000401
24	0.0201	0.51	0.728	1.041	1.21	599.0	826.8	0.000314
25	0.0179	0.455	0.918	0.735	0.978	943.0	1,022	0.000254
26	0.0159	0.405	1.163	0.515	0.767	1,513	1,305	0.000199
27	0.0142	0.361	1.458	0.367	0.609	2,372	1,643	0.000158
28	0.0126	0.321	1.852	0.256	0.482	3,844	2,077	0.000125
29	0.0113	0.286	2.302	0.185	0.385	5,943	2,596	0.000100
30	0.01	0.255	2.940	0.128	0.302	9,702	3,307	0.0000785
31	0.0089	0.227	3.710	0.090	0.241	15,455	4,147	0.0000626
32	0.008	0.202	4.594	0.066	0.191	23,666	5,234	0.0000496
33	0.0071	0.18	5.833	0.046	0.152	38,163	6,589	0.0000394
34	0.0063	0.16	7.408	0.032	0.120	61,523	8,321	0.0000312
35	0.0056	0.143	9.375	0.023	0.0951	98,591	10,510	0.0000247
36	0.005	0.127	11.76	0.0160	0.0755	154,440	13,245	0.0000196
37	0.0045	0.113	14.52	0.0117	0.0586	236,292	17,079	0.0000152
38	0.004	0.101	18.37	0.0082	0.0485	377,437	20,604	0.0000126
39	0.0035	0.09	24.00	0.0055	0.0377	646,512	26,517	0.00000979
40	0.0031	0.08	30.59	0.0038	0.0300	1,050,533	33,325	0.00000779
41	0.00275	0.07	38.87	0.0027	0.0237	1,696,131	42,144	0.00000616
42	0.0025	0.063	47.04	0.00200	0.0188	2,483,712	53,307	0.00000487
43	0.00225	0.057	58.07	0.00146	0.0146	3,785,292	68,317	0.00000380
44	0.0020	0.051	73.50	0.00103	0.0121	6,076,751	82,677	0.00000314
45	0.00175	0.044	96.00	0.00069	0.0094	10,256,016	106,833	0.00000243
46	0.0015	0.038	130.67	0.00043	0.0077	16,876,504	129,157	0.00000201
47	0.0014	0.036	150.00	0.00035	0.0059	25,286,240	168,575	0.00000154
48	0.0013	0.033	173.96	0.00028	0.0047	37,324,068	214,550	0.00000121