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Alloy 650 Resistance Heating

ASTM: B344 **DIN:** 17470/17471 **UNS:** N06003
Ω/cir. mil. ft.: 650 **Weight/Density:** .301 lbs/in² (8.3 g/cm³)
Chemical Composition %: Cr 19-21%, Mn 2.5% max, Ni - Balance
Coeff. of Lin. Expansion, X 10⁻⁶: 14.0(200°C), 15.0(400°C), 15.5(600°C), 16.0(800°C), 17.0(1,000°C)
Conductivity: 14.6 w/mK **Specific Heat:** .110 cal./gm @ 20°C
Temp. Coeff. of Resistance: 0.00009 **Specific Gravity:** 8.41
Melting Point: ~1,400°C (~2,552°F) **Elongation:** 20-40%
Max Operating Temp: ~1,230°C (~2,246°F) **Yield Point:** 45,000-65,000 PSI
Soft Tensile: 95,000-125,000 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	0.126	21.63	14.7	8.45	67.34	0.00407
14	0.064	1.63	0.159	15.22	11.6	13.5	85.25	0.00322
15	0.057	1.45	0.200	10.77	9.22	21.5	107.5	0.00256
16	0.051	1.29	0.250	7.663	7.30	33.5	134.2	0.00203
17	0.045	1.15	0.321	5.323	5.80	55.3	172.4	0.00161
18	0.04	1.02	0.406	3.740	4.52	88.6	218.2	0.00126
19	0.036	0.912	0.502	2.698	3.66	135.1	269.4	0.00102
20	0.032	0.812	0.635	1.900	2.90	216.4	340.9	0.000804
21	0.0285	0.723	0.800	1.342	2.30	344.0	429.9	0.000638
22	0.0253	0.644	1.017	0.938	1.82	554.9	545.6	0.000507
23	0.0226	0.573	1.272	0.670	1.44	869.4	683.5	0.000401
24	0.0201	0.51	1.609	0.471	1.13	1,391	864.5	0.000314
25	0.0179	0.455	2.029	0.333	0.916	2,212	1,090	0.000254
26	0.0159	0.405	2.571	0.233	0.715	3,551	1,381	0.000199
27	0.0142	0.361	3.228	0.166	0.570	5,591	1,732	0.000158
28	0.0126	0.321	4.090	0.116	0.449	8,994	2,199	0.000125
29	0.0113	0.286	5.090	0.084	0.361	13,920	2,734	0.000100
30	0.01	0.255	6.500	0.059	0.283	22,700	3,492	0.0000785
31	0.0089	0.227	8.206	0.041	0.225	36,160	4,407	0.0000626
32	0.008	0.202	10.16	0.030	0.179	55,430	5,456	0.0000496
33	0.0071	0.18	12.90	0.021	0.142	89,330	6,925	0.0000394
34	0.0063	0.16	16.37	0.015	0.112	144,000	8,795	0.0000312
35	0.0056	0.143	20.72	0.010	0.0890	230,600	11,130	0.0000247
36	0.005	0.127	26.00	0.0073	0.0707	363,200	13,970	0.0000196
37	0.0045	0.113	32.09	0.0053	0.0547	553,200	17,240	0.0000152
38	0.004	0.101	40.62	0.0037	0.0452	886,300	21,820	0.0000126
39	0.0035	0.09	53.06	0.0025	0.0352	1,512,000	28,500	0.00000979
40	0.0031	0.08	67.63	0.0017	0.0281	2,458,000	36,340	0.00000779
41	0.00275	0.07	85.98	0.0012	0.0222	3,970,000	46,170	0.00000616
42	0.0025	0.063	104.00	0.00091	0.0175	5,810,000	55,870	0.00000487
43	0.00225	0.057	128.50	0.00066	0.0137	8,863,000	68,970	0.00000380
44	0.0020	0.051	162.50	0.00046	0.0113	14,180,000	87,260	0.00000314
45	0.00175	0.044	212.40	0.00031	0.0088	24,210,000	114,000	0.00000243
46	0.0015	0.038	288.90	0.00020	0.0072	44,840,000	155,200	0.00000201
47	0.0014	0.036	331.60	0.00016	0.0055	59,060,000	178,100	0.00000154
48	0.0013	0.033	384.60	0.00013	0.0044	79,230,000	206,600	0.00000121