



6320 Highview Drive, Fort Wayne, IN 46818  
 Phone: (260) 490-6477 Fax: (260) 490-8437  
 Website: <http://www.precisionwiretech.com>

## Alloy 812 Resistance Heating

<b>ASTM:</b> B603	<b>UNS:</b> K92400
<b>Ω/cir. mil. ft.:</b> 815	<b>Weight/Density:</b> .293 lbs/in <sup>2</sup> (8.1 g/cm <sup>3</sup> )
<b>Chemical Composition %:</b> Cr 20-24%, Al 4-5.25%, Fe - Balance	
<b>Coeff. of Lin. Expansion, X 10<sup>-6</sup>:</b> 11 (250°C), 12 (500°C), 14 (750°C), 15 (1,000°C)	
<b>Conductivity:</b> 16.7 w/mK	<b>Specific Heat:</b> .110 cal./gm @ 20°C
<b>Temp. Coeff. of Resistance:</b> .00002	<b>Specific Gravity:</b> 7.25
<b>Melting Point:</b> ~1,500°C (~2,730°F)	<b>Elongation:</b> 15-30%
<b>Max Operating Temp:</b> ~1,300°C (~2,370°F)	<b>Yield Point:</b> 60,000-80,000 PSI
<b>Soft Tensile:</b> 90,000-110,000 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 <sup>2</sup> )
B&S	Inches	Mm						
13	0.072	1.83	0.157	17.27	12.8	12.3	78.27	0.00407
14	0.064	1.63	0.199	12.13	10.1	19.7	98.93	0.00322
15	0.057	1.45	0.251	8.566	8.04	31.2	124.4	0.00256
16	0.051	1.29	0.313	6.136	6.37	49.2	156.9	0.00203
17	0.045	1.15	0.402	4.215	5.05	79.6	197.9	0.00161
18	0.04	1.02	0.509	2.960	3.96	128.8	252.8	0.00126
19	0.036	0.912	0.629	2.158	3.20	196.4	312.3	0.00102
20	0.032	0.812	0.796	1.516	2.52	315.3	396.2	0.000804
21	0.0285	0.723	1.003	1.071	2.00	501.0	499.3	0.000638
22	0.0253	0.644	1.264	0.755	1.59	795.8	630.1	0.000507
23	0.0226	0.573	1.594	0.535	1.26	1,267	794.9	0.000401
24	0.0201	0.51	2.010	0.377	1.00	2,013	1,002	0.000314
25	0.0179	0.455	2.534	0.266	0.791	3,203	1,264	0.000254
26	0.0159	0.405	3.196	0.188	0.627	5,090	1,594	0.000199
27	0.0142	0.361	4.027	0.133	0.498	8,086	2,009	0.000158
28	0.0126	0.321	5.082	0.093	0.395	12,870	2,534	0.000125
29	0.0113	0.286	6.402	0.067	0.313	20,440	3,194	0.000100
30	0.01	0.255	8.071	0.047	0.247	32,890	4,050	0.0000785
31	0.0089	0.227	10.19	0.033	0.197	51,720	5,081	0.0000626
32	0.008	0.202	12.85	0.023	0.156	82,250	6,406	0.0000496
33	0.0071	0.18	16.20	0.017	0.124	131,000	8,084	0.0000394
34	0.0063	0.16	20.43	0.012	0.098	207,800	10,188	0.0000312
35	0.0056	0.143	25.75	0.008	0.0779	330,600	12,845	0.0000247
36	0.005	0.127	32.48	0.0058	0.0617	525,900	16,200	0.0000196
37	0.0045	0.113	40.95	0.0041	0.0490	836,000	20,425	0.0000152
38	0.004	0.101	51.65	0.0029	0.0388	1,330,000	25,760	0.0000126
39	0.0035	0.09	65.13	0.0020	0.0308	2,114,000	32,478	0.00000979
40	0.0031	0.08	82.09	0.0014	0.0244	3,362,000	40,950	0.00000779
41	0.00275	0.07	107.40	0.0010	0.0194	5,367,000	51,653	0.00000616
42	0.0025	0.063	129.90	0.00073	0.0154	8,555,000	64,809	0.00000487
43	0.00225	0.057	160.40	0.00053	0.0120	13,980,000	83,682	0.00000380
44	0.0020	0.051	203.75	0.00037	0.0099	21,210,000	101,450	0.00000314
45	0.00175	0.044	266.12	0.00025	0.0076	34,886,408	131,092	0.00000243
46	0.0015	0.038	362.22	0.00016	0.0063	57,406,365	158,484	0.00000201
47	0.0014	0.036	415.82	0.00013	0.0048	86,012,551	206,852	0.00000154
48	0.0013	0.033	482.25	0.00010	0.0038	126,959,893	263,267	0.00000121