PRECISION WIRE TECHNOLOGIES

6320 Highview Drive, Fort Wayne, IN 46818
P: 260.490.6477 F: 260.490.8437
www.precisionwiretech.com

ALLOY 750 RESISTANCE HEATING — IRON CHROME ALUMINUM

ASTM: *B603*
UNS: *K91670*
Ω/cir. mil. ft.: *750*
Weight/Density: *.264 lbs/in^2 (7.3 g/cm^3)*
Chemical Composition %: *Cr 14-16%, Al 3.75 4.-75%, Mg .6%, C .08%, Si .5%, Fe - Balance*
Coeff. of Lin. Expansion, X 10^{-6}: *11 (250˚C), 12 (500˚C), 14 (750˚C), 15 (1,000˚C)*
Conductivity: *21 w/mK*
Specific Heat: *.110 cal./gm @ 20˚C*
Temp. Coeff. of Resistance: *.00009*
Specific Gravity: *7.3*
Melting Point: *~1,510˚C (~2,750˚F)*
Elongation: *15-30%*
Max Operating Temp: *~1,040˚C (~1,900˚F)*
Yield Point: *60,000-80,000 PSI*
Soft Tensile: *75,000-105,000 PSI*

Diameter			Resistance @ 68º F/20º C	Sq. in./Ω	Weight	Ω/lb.	Ft/Lb.	Cross sectional
B&S	Inches	Mm	Ω/ft	68°F	Lb./1000 ft			area (in ^{2})
13	0.072	1.83	0.145	18.76	12.9	11.2	77.56	0.00407
14	0.064	1.63	0.183	13.18	10.2	17.9	98.03	0.00322
15	0.057	1.45	0.231	9.309	8.11	28.5	123.3	0.00256
16	0.051	1.29	0.288	6.668	6.43	44.8	155.5	0.00203
17	0.045	1.15	0.370	4.580	5.10	72.6	196.1	0.00161
18	0.04	1.02	0.469	3.217	3.99	117.4	250.5	0.00126
19	0.036	0.912	0.579	2.345	3.23	179.1	309.5	0.00102
20	0.032	0.812	0.732	1.647	2.55	287.6	392.6	0.000804
21	0.0285	0.723	0.923	1.164	2.02	456.9	494.8	0.000638
22	0.0253	0.644	1.172	0.814	1.59	735.9	627.9	0.000507
23	0.0226	0.573	1.468	0.580	1.27	1,155	786.9	0.000401
24	0.0201	0.51	1.856	0.408	1.01	1,846	994.8	0.000314
25	0.0179	0.455	2.341	0.288	0.797	2,936	1,254	0.000254
26	0.0159	0.405	2.967	0.202	0.629	4,718	1,590	0.000199
27	0.0142	0.361	3.719	0.144	0.502	7,412	1,993	0.000158
28	0.0126	0.321	4.724	0.101	0.395	11,961	2,532	0.000125
29	0.0113	0.286	5.874	0.073	0.318	18,491	3,148	0.000100
30	0.01	0.255	7.500	0.050	0.249	30,143	4,019	0.0000785
31	0.0089	0.227	9.469	0.035	0.197	48,046	5,074	0.0000626
32	0.008	0.202	11.72	0.026	0.159	73,602	6,280	0.0000496
33	0.0071	0.18	14.88	0.018	0.125	118,638	7,973	0.0000394
34	0.0063	0.16	18.90	0.013	0.099	191,457	10,130	0.0000312
35	0.0056	0.143	23.92	0.009	0.0780	306,654	12,820	0.0000247
36	0.005	0.127	30.00	0.0063	0.0622	482,400	16,080	0.0000196
37	0.0045	0.113	37.04	0.0046	0.0504	735,244	19,850	0.0000152
38	0.004	0.101	46.88	0.0032	0.0398	1,177,626	25,120	0.0000126
39	0.0035	0.09	61.22	0.0022	0.0305	2,008,628	32,810	0.00000979
40	0.0031	0.08	78.04	0.0015	0.0239	3,263,788	41,820	0.00000779
41	0.00275	0.07	99.17	0.0010	0.0195	5,081,945	51,243	0.00000616
42	0.0025	0.063	120.00	0.00079	0.0154	7,777,985	64,817	0.00000487
43	0.00225	0.057	148.15	0.00057	0.0120	12,306,299	83,068	0.00000380
44	0.0020	0.051	187.50	0.00040	0.0099	18,848,919	100,528	0.00000314
45	0.00175	0.044	244.90	0.00027	0.0077	31,812,201	129,900	0.00000243
46	0.0015	0.038	333.33	0.00017	0.0064	52,347,689	157,043	0.00000201
47	0.0014	0.036	382.65	0.00014	0.0049	78,433,085	204,972	0.00000154
48	0.0013	0.033	443.79	0.00011	0.0038	115,772,128	260,873	0.00000121

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ALLOY 812 RESISTANCE HEATING IRON CHROME ALUMINUM

ASTM: *B603*
UNS: *K92400*
Ω/cir. mil. ft.: *815*
Weight/Density: *.293 lbs/in² (8.1 g/cm³)*
Chemical Composition %: *Cr 20-24%, Al 4-5.25%, Fe - Balance*
Coeff. of Lin. Expansion, X 10^{-6}: *11 (250˚C), 12 (500˚C), 14 (750˚C), 15 (1,000˚C)*
Conductivity: *16.7 w/mK*
Specific Heat: *.110 cal./gm @ 20˚C*
Temp. Coeff. of Resistance: *.00002*
Specific Gravity: *7.25*
Melting Point: *~1,500˚C (~2,730˚F)*
Elongation: *15-30%*
Max Operating Temp: *~1,300˚C (~2,370˚F)*
Yield Point: *60,000-80,000 PSI*
Soft Tensile: *90,000-110,000 PSI*

Diameter			Resistance @ 68º F/20º C	Sq. in./Ω	Weight	Ω/lb.	Ft/Lb.	Cross sectional
B&S	Inches	Mm	Ω/ft	68°F	Lb./1000 ft			area (in ^{2})
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

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ALLOY 872 RESISTANCE HEATING — IRON CHROME ALUMINUM

ASTM: *B603-1* **DIN:** *17470* **UNS:** *K92500*

Ω/cir. mil. ft.: *872* **Weight/Density:** *.256 lbs/in² (7.1 g/cm³)*

Chemical Composition %: *Cr 20-24%, Al 5-6%, Fe - Balance*

Coeff. of Lin. Expansion, X 10^{-6}: *11 (200˚C), 12 (400˚C), 13 (600˚C), 14 (800˚C), 15 (1,000˚C)*

Conductivity: *12.5 w/mK* **Specific Heat:** *.110 cal./gm @ 20˚C*

Temp. Coeff. of Resistance: *.00002* **Specific Gravity:** *7.10*

Melting Point: *~1,500˚C (~2,730˚F)* **Elongation:** *20-40%*

Max Operating Temp: *~1,350˚C (~2,462˚F)* **Yield Point:** *62,000-92,000 PSI*

Soft Tensile: *86,000-110,000 PSI*

Diameter			Resistance @ 68º F/20º C	Sq. in./Ω	Weight	Ω/lb.	Ft/Lb.	Cross sectional
B&S	Inches	Mm	Ω/ft	68°F	Lb./1000 ft			area (in ^{2})
13	0.072	1.83	0.169	16.08	12.5	13.5	79.98	0.00407
14	0.064	1.63	0.214	14.67	9.91	21.4	100.8	0.00322
15	0.057	1.45	0.269	10.36	7.87	34.0	127.1	0.00256
16	0.051	1.29	0.336	7.380	6.24	54.1	160.3	0.00203
17	0.045	1.15	0.432	5.125	4.95	86.1	202.2	0.00161
18	0.04	1.02	0.547	3.600	3.92	136.9	255.0	0.00126
19	0.036	0.912	0.675	2.598	3.11	217.6	321.4	0.00102
20	0.032	0.812	0.854	1.829	2.47	346.1	405.5	0.000804
21	0.0285	0.723	1.077	1.292	1.96	549.9	511.1	0.000638
22	0.0253	0.644	1.367	0.904	1.55	874.0	644.1	0.000507
23	0.0226	0.573	1.713	0.645	1.23	1,391	812.7	0.000401
24	0.0201	0.51	2.166	0.454	0.977	2,211	1,024	0.000314
25	0.0179	0.455	2.731	0.320	0.774	3,517	1,292	0.000254
26	0.0159	0.405	3.461	0.225	0.614	5,591	1,629	0.000199
27	0.0142	0.361	4.339	0.160	0.487	8,881	2,053	0.000158
28	0.0126	0.321	5.511	0.112	0.386	14,110	2,591	0.000125
29	0.0113	0.286	6.853	0.081	0.306	22,460	3,265	0.000100
30	0.01	0.255	8.750	0.056	0.242	36,100	4,139	0.0000785
31	0.0089	0.227	11.05	0.039	0.193	56,800	5,195	0.0000626
32	0.008	0.202	13.67	0.029	0.153	90,400	6,551	0.0000496
33	0.0071	0.18	17.36	0.020	0.121	143,900	8,267	0.0000394
34	0.0063	0.16	22.05	0.014	0.096	228,400	10,420	0.0000312
35	0.0056	0.143	27.90	0.010	0.0762	363,200	13,130	0.0000247
36	0.005	0.127	35.00	0.0070	0.0604	577,700	16,560	0.0000196
37	0.0045	0.113	43.21	0.0051	0.0479	918,100	20,880	0.0000152
38	0.004	0.101	54.69	0.0036	0.0380	1,461,000	26,340	0.0000126
39	0.0035	0.09	71.43	0.0024	0.0301	2,322,000	33,210	0.00000979
40	0.0031	0.08	91.05	0.0017	0.0239	3,692,000	41,870	0.00000779
41	0.00275	0.07	115.70	0.0012	0.0187	5,896,000	52,830	0.00000616
42	0.0025	0.063	140.00	0.00087	0.0151	9,336,000	66,240	0.00000487
43	0.00225	0.057	172.84	0.00064	0.0117	15,350,000	85,550	0.00000380
44	0.0020	0.051	218.75	0.00045	0.0097	23,300,000	103,500	0.00000314
45	0.00175	0.044	285.71	0.00030	0.0075	38,274,054	133,959	0.00000243
46	0.0015	0.038	388.89	0.00019	0.0062	62,980,814	161,951	0.00000201
47	0.0014	0.036	446.43	0.00015	0.0047	94,364,806	211,377	0.00000154
48	0.0013	0.033	517.75	0.00012	0.0037	139,288,341	269,025	0.00000121