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## Alloy 42 Nickel Iron (Glass Sealing)

<b>ASTM:</b>	<b>UNS:</b> K94100
<b>Ω/cir. mil. ft.:</b> 42	<b>Weight/Density:</b> .292 lbs/in <sup>2</sup> (8.1 g/cm <sup>3</sup> )
<b>Chemical Composition %:</b> Ni 42%, Cr .25% max, Al .15% max, Fe Balance	
<b>Coeff. of Lin. Expansion, X 10<sup>-6</sup>:</b> 4.5 (200°C), 6.0 (400°C), 9.5 (600°C), 11.4 (800°C), 13.2 (1,000°C)	
<b>Conductivity:</b> 10.3 w/mK	<b>Specific Heat:</b> .120 cal./gm @ 20°C
<b>Temp. Coeff. of Resistance:</b> 0.002600	<b>Specific Gravity:</b> 8.12
<b>Melting Point:</b> ~1,427°C (~2,600°F)	<b>Elongation:</b> 20-40%
<b>Max Operating Temp:</b> ~1,000°C (~1,830°F)	<b>Yield Point:</b> 35,000-50,000
<b>Soft Tensile:</b> 70,000-90,000 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 <sup>2</sup> )
B&S	Inches	Mm						
13	0.072	1.83	0.083	32.72	14.3	5.82	70.12	0.00407
14	0.064	1.63	0.105	22.98	11.3	9.30	88.63	0.00322
15	0.057	1.45	0.132	16.24	9.0	14.75	111.5	0.00256
16	0.051	1.29	0.165	11.63	7.11	23.24	140.6	0.00203
17	0.045	1.15	0.212	7.989	5.64	37.64	177.3	0.00161
18	0.04	1.02	0.269	5.611	4.42	60.87	226.5	0.00126
19	0.036	0.912	0.332	4.090	3.57	92.83	279.8	0.00102
20	0.032	0.812	0.420	2.873	2.82	149.1	355.0	0.000804
21	0.0285	0.723	0.529	2.030	2.24	236.8	447.3	0.000638
22	0.0253	0.644	0.672	1.420	1.78	378.1	562.9	0.000507
23	0.0226	0.573	0.842	1.012	1.41	599.2	711.7	0.000401
24	0.0201	0.51	1.064	0.712	1.10	967.3	908.9	0.000314
25	0.0179	0.455	1.342	0.503	0.890	1,508	1,124	0.000254
26	0.0159	0.405	1.701	0.352	0.697	2,439	1,434	0.000199
27	0.0142	0.361	2.133	0.251	0.554	3,852	1,806	0.000158
28	0.0126	0.321	2.708	0.175	0.438	6,184	2,283	0.000125
29	0.0113	0.286	3.368	0.127	0.350	9,611	2,854	0.000100
30	0.01	0.255	4.300	0.088	0.275	15,633	3,636	0.0000785
31	0.0089	0.227	5.429	0.062	0.219	24,749	4,559	0.0000626
32	0.008	0.202	6.719	0.045	0.174	38,658	5,754	0.0000496
33	0.0071	0.18	8.530	0.031	0.138	61,786	7,243	0.0000394
34	0.0063	0.16	10.83	0.022	0.109	99,099	9,147	0.0000312
35	0.0056	0.143	13.71	0.015	0.0865	158,428	11,554	0.0000247
36	0.005	0.127	17.20	0.0110	0.0687	250,443	14,561	0.0000196
37	0.0045	0.113	21.23	0.0080	0.0533	398,690	18,776	0.0000152
38	0.004	0.101	26.88	0.0056	0.0442	608,715	22,650	0.0000126
39	0.0035	0.09	35.10	0.0038	0.0343	1,023,259	29,151	0.00000979
40	0.0031	0.08	44.75	0.0026	0.0273	1,639,244	36,635	0.00000779
41	0.00275	0.07	56.86	0.0018	0.0216	2,634,258	46,329	0.00000616
42	0.0025	0.063	68.80	0.00137	0.0171	4,031,767	58,601	0.00000487
43	0.00225	0.057	84.94	0.00100	0.0133	6,379,046	75,102	0.00000380
44	0.0020	0.051	107.50	0.00070	0.0110	9,770,453	90,888	0.00000314
45	0.00175	0.044	140.41	0.00047	0.0085	16,490,051	117,444	0.00000243
46	0.0015	0.038	191.11	0.00030	0.0070	27,134,747	141,984	0.00000201
47	0.0014	0.036	219.39	0.00024	0.0054	40,656,273	185,317	0.00000154
48	0.0013	0.033	254.44	0.00019	0.0042	60,011,196	235,858	0.00000121