

ALLOY 2918 IRON

NICKEL IRON (GLASS SEALING)

ASTM: F15

UNS: K94610

Ω/cir. mil. ft.: 49

Weight/Density: .296 lbs/in² (8.2 g/cm³)

Chemical Composition %: Fe, Ni, Co, Cr, C, Mn, Si

Coeff. of Lin. Expansion, X 10⁻⁶: 13.30 in/in/°C **Conductivity:** 17.5 w/mK

Specific Heat: .119 cal./gm @ 20°C

Temp. Coeff. of Resistance: 0.00630

Specific Gravity: 8.2

Melting Point: 1450°C

Elongation: 25% min

Max Operating Temp: 700°C

Yield Point: 55,100 psi min

Soft Tensile: 63,800 psi min

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	0.0095	287.2	14.457	0.65	69.17	0.00407
14	0.064	1.63	0.0120	201.7	11.437	1.05	87.43	0.00322
15	0.057	1.45	0.0151	142.48	9.093	1.66	109.97	0.00256
16	0.051	1.29	0.0188	102.06	7.211	2.61	138.69	0.00203
17	0.045	1.15	0.0242	70.11	5.719	4.23	174.86	0.00161
18	0.04	1.02	0.0306	49.24	4.476	6.8	223.44	0.00126
19	0.036	0.912	0.0378	35.90	3.623	10.4	276.01	0.00102
20	0.032	0.812	0.0479	25.21	2.856	16.8	350.16	0.000804
21	0.0285	0.723	0.0603	17.81	2.266	26.6	441.27	0.000638
22	0.0253	0.644	0.0766	12.459	1.801	42.5	555.29	0.000507
23	0.0226	0.573	0.0959	8.881	1.424	67.4	702.07	0.000401
24	0.0201	0.51	0.1213	6.248	1.115	108.7	896.60	0.000314
25	0.0179	0.455	0.1529	4.413	0.902	169.5	1,108.39	0.000254
26	0.0159	0.405	0.1938	3.093	0.707	274.2	1,414.73	0.000199
27	0.0142	0.361	0.2430	2.203	0.561	433.0	1,781.85	0.000158
28	0.0126	0.321	0.3086	1.539	0.444	695	2,252.25	0.000125
29	0.0113	0.286	0.3837	1.110	0.355	1,080	2,815.32	0.000100
30	0.01	0.255	0.4900	0.769	0.279	1,757	3,586.39	0.0000785
31	0.0089	0.227	0.6186	0.542	0.222	2,782	4,497.31	0.0000626
32	0.008	0.202	0.7656	0.394	0.176	4,346	5,676.04	0.0000496
33	0.0071	0.18	0.9720	0.275	0.140	6,946	7,145.47	0.0000394
34	0.0063	0.16	1.2346	0.192	0.111	11,140	9,023.45	0.0000312
35	0.0056	0.143	1.5625	0.135	0.088	17,809	11,398.04	0.0000247
36	0.005	0.127	1.9600	0.0962	0.070	28,153	14,363.85	0.0000196
37	0.0045	0.113	2.4198	0.0701	0.054	44,818	18,521.81	0.0000152
38	0.004	0.101	3.0625	0.0492	0.045	68,428	22,343.77	0.0000126
39	0.0035	0.09	4.0000	0.0330	0.035	115,028	28,757.05	0.00000979
40	0.0031	0.08	5.0989	0.0229	0.028	184,273	36,140.12	0.00000779
41	0.00275	0.07	6.4793	0.0160	0.022	296,126	45,703.17	0.00000616
42	0.0025	0.063	7.8400	0.01202	0.017	453,225	57,809.35	0.00000487
43	0.00225	0.057	9.6790	0.00876	0.013	717,091	74,087.25	0.00000380
44	0.0020	0.051	12.2500	0.00615	0.011	1,098,332	89,659.72	0.00000314
45	0.00175	0.044	16.0000	0.00412	0.009	1,853,706	115,856.60	0.00000243
46	0.0015	0.038	21.7778	0.00260	0.007	3,050,314	140,065.44	0.00000201
47	0.0014	0.036	25.0000	0.00211	0.005	4,570,317	182,812.68	0.00000154
48	0.0013	0.033	28.9941	0.00169	0.004	6,746,073	232,670.69	0.00000121

ALLOY 42 NICKEL IRON(GLASS SEALING)

NICKEL IRON (GLASS SEALING)

ASTM:	UNS: K94100
Ω/cir. mil. ft.: 42	Weight/Density: .292 lbs/in ² (8.1 g/cm ³)
Chemical Composition %: Ni 42%, Cr .25% max, Al .15% max, Fe Balance	
Coeff. of Lin. Expansion, X 10⁻⁶: 4.5 (200°C), 6.0 (400°C), 9.5 (600°C), 11.4 (800°C), 13.2 (1,000°C)	
Conductivity: 10.3 w/mK	Specific Heat: .120 cal./gm @ 20°C
Temp. Coeff. of Resistance: 0.002600	Specific Gravity: 8.12
Melting Point: ~1,427°C (~2,600°F)	Elongation: 20-40%
Max Operating Temp: ~1,000°C (~1,830°F)	Yield Point: 35,000-50,000
Soft Tensile: 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 ²)
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

ALLOY 42-5 NICKEL IRON (GLASS SEALING)

NICKEL IRON (GLASS SEALING)

ASTM:	UNS: K94760
Ω/cir. mil. ft.: 570	Weight/Density: .293 lbs/in ² (8.1 g/cm ³)
Chemical Composition %: Ni 42.5%, Cr 5.75% max, Mn .50% max, Si .25% max, Al .2% max, C .07% max, P .009% max, S .005% max, Fe - Balance	
Coeff. of Lin. Expansion, X 10⁻⁶: 9.7 (20-100°C)	Specific Heat: .120 cal./gm @ 20°C
Conductivity: 12.5 w/mK	Specific Gravity: 8.12
Temp. Coeff. of Resistance:	Elongation: 20-40%
Melting Point: ~1,427°C (~2,600°F)	Yield Point: 36,000-51,000
Max Operating Temp:	Soft Tensile: 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 ²)
B&S	Inches	Mm						
13	0.072	1.83	0.110	24.69	14.3	7.68	69.88	0.00407
14	0.064	1.63	0.139	17.34	11.3	12.29	88.33	0.00322
15	0.057	1.45	0.175	12.25	9.00	19.49	111.1	0.00256
16	0.051	1.29	0.219	8.773	7.14	30.70	140.1	0.00203
17	0.045	1.15	0.281	6.027	5.66	49.73	176.7	0.00161
18	0.04	1.02	0.356	4.233	4.43	80.41	225.7	0.00126
19	0.036	0.912	0.440	3.086	3.59	122.6	278.8	0.00102
20	0.032	0.812	0.557	2.167	2.83	196.9	353.7	0.000804
21	0.0285	0.723	0.702	1.531	2.24	312.8	445.8	0.000638
22	0.0253	0.644	0.890	1.071	1.78	499.5	561.0	0.000507
23	0.0226	0.573	1.116	0.763	1.41	791.5	709.3	0.000401
24	0.0201	0.51	1.411	0.537	1.10	1,278	905.8	0.000314
25	0.0179	0.455	1.779	0.379	0.893	1,992	1,120	0.000254
26	0.0159	0.405	2.255	0.266	0.700	3,222	1,429	0.000199
27	0.0142	0.361	2.827	0.189	0.556	5,089	1,800	0.000158
28	0.0126	0.321	3.590	0.132	0.440	8,169	2,275	0.000125
29	0.0113	0.286	4.464	0.095	0.352	12,696	2,844	0.000100
30	0.01	0.255	5.700	0.066	0.276	20,652	3,623	0.0000785
31	0.0089	0.227	7.196	0.047	0.220	32,694	4,543	0.0000626
32	0.008	0.202	8.906	0.034	0.174	51,070	5,734	0.0000496
33	0.0071	0.18	11.31	0.024	0.139	81,623	7,219	0.0000394
34	0.0063	0.16	14.36	0.017	0.110	130,915	9,116	0.0000312
35	0.0056	0.143	18.18	0.012	0.0868	209,292	11,515	0.0000247
36	0.005	0.127	22.80	0.0083	0.0689	330,849	14,511	0.0000196
37	0.0045	0.113	28.15	0.0060	0.0534	526,693	18,711	0.0000152
38	0.004	0.101	35.63	0.0042	0.0443	804,147	22,573	0.0000126
39	0.0035	0.09	46.53	0.0028	0.0344	1,351,784	29,051	0.00000979
40	0.0031	0.08	59.31	0.0020	0.0274	2,165,535	36,510	0.00000779
41	0.00275	0.07	75.37	0.0014	0.0217	3,480,005	46,171	0.00000616
42	0.0025	0.063	91.20	0.00103	0.0171	5,326,194	58,401	0.00000487
43	0.00225	0.057	112.59	0.00075	0.0134	8,427,085	74,846	0.00000380
44	0.0020	0.051	142.50	0.00053	0.0110	12,907,328	90,578	0.00000314
45	0.00175	0.044	186.12	0.00035	0.0085	21,784,300	117,043	0.00000243
46	0.0015	0.038	253.33	0.00022	0.0071	35,846,554	141,500	0.00000201
47	0.0014	0.036	290.82	0.00018	0.0054	53,709,264	184,684	0.00000154
48	0.0013	0.033	337.28	0.00015	0.0043	79,278,224	235,053	0.00000121

4706 NICKEL IRON ALLOYS (GLASS SEALING) NICKEL IRON (GLASS SEALING)

ASTM:	DIN: 17745
Ω/cir. mil. ft.: 550	Weight/Density: .292 lbs/in² (8.1 g/cm³)
Chemical Composition %: Ni 46-48%, C .020% max, Cr 5.5-6.5%, Mn .3%, Si .3%, Fe - Bal	
Coeff. of Lin. Expansion, X 10⁻⁶: 9.7 (100°C), 9.3 (200°C), 9.2 (300°C), 10.0 (400°C), 11.6 (500°C)	
Conductivity: 14 w/mK	Specific Heat: .119 cal./gm @ 20°C
Temp. Coeff. of Resistance:	Specific Gravity: 8.10
Melting Point: ~1,450°C (~2,640°F)	Elongation: 20-40%
Max Operating Temp:	Yield Point: 20,000-40,000
Soft Tensile: 62,000-82,000 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	0.106	25.58	14.3	7.44	70.12	0.00407
14	0.064	1.63	0.134	17.97	11.3	11.90	88.63	0.00322
15	0.057	1.45	0.169	12.69	8.97	18.87	111.5	0.00256
16	0.051	1.29	0.211	9.092	7.11	29.73	140.6	0.00203
17	0.045	1.15	0.272	6.246	5.64	48.14	177.3	0.00161
18	0.04	1.02	0.344	4.387	4.42	77.86	226.5	0.00126
19	0.036	0.912	0.424	3.198	3.57	118.7	279.8	0.00102
20	0.032	0.812	0.537	2.246	2.82	190.7	355.0	0.000804
21	0.0285	0.723	0.677	1.587	2.24	302.9	447.3	0.000638
22	0.0253	0.644	0.859	1.110	1.78	483.7	562.9	0.000507
23	0.0226	0.573	1.077	0.791	1.41	766.4	711.7	0.000401
24	0.0201	0.51	1.361	0.557	1.10	1,237	908.9	0.000314
25	0.0179	0.455	1.717	0.393	0.890	1,929	1,124	0.000254
26	0.0159	0.405	2.176	0.276	0.697	3,120	1,434	0.000199
27	0.0142	0.361	2.728	0.196	0.554	4,927	1,806	0.000158
28	0.0126	0.321	3.464	0.137	0.438	7,909	2,283	0.000125
29	0.0113	0.286	4.307	0.099	0.350	12,293	2,854	0.000100
30	0.01	0.255	5.500	0.069	0.275	19,995	3,636	0.0000785
31	0.0089	0.227	6.944	0.048	0.219	31,655	4,559	0.0000626
32	0.008	0.202	8.594	0.035	0.174	49,447	5,754	0.0000496
33	0.0071	0.18	10.91	0.025	0.138	79,029	7,243	0.0000394
34	0.0063	0.16	13.86	0.017	0.109	126,754	9,147	0.0000312
35	0.0056	0.143	17.54	0.012	0.0865	202,640	11,554	0.0000247
36	0.005	0.127	22.00	0.0086	0.0687	320,334	14,561	0.0000196
37	0.0045	0.113	27.16	0.0062	0.0533	509,953	18,776	0.0000152
38	0.004	0.101	34.38	0.0044	0.0442	778,589	22,650	0.0000126
39	0.0035	0.09	44.90	0.0029	0.0343	1,308,820	29,151	0.00000979
40	0.0031	0.08	57.23	0.0020	0.0273	2,096,707	36,635	0.00000779
41	0.00275	0.07	72.73	0.0014	0.0216	3,369,399	46,329	0.00000616
42	0.0025	0.063	88.00	0.00107	0.0171	5,156,911	58,601	0.00000487
43	0.00225	0.057	108.64	0.00078	0.0133	8,159,245	75,102	0.00000380
44	0.0020	0.051	137.50	0.00055	0.0110	12,497,092	90,888	0.00000314
45	0.00175	0.044	179.59	0.00037	0.0085	21,091,925	117,444	0.00000243
46	0.0015	0.038	244.44	0.00023	0.0070	34,707,235	141,984	0.00000201
47	0.0014	0.036	280.61	0.00019	0.0054	52,002,210	185,317	0.00000154
48	0.0013	0.033	325.44	0.00015	0.0042	76,758,507	235,858	0.00000121

ALLOY 52 NICKEL IRON (GLASS SEALING)

NICKEL IRON (GLASS SEALING)

ASTM: F30	Din: 17745	UNS: N14052
Ω/cir. mil. ft.: 258	Weight/Density: .296 lbs/in ² (8.2 g/cm ³)	
Chemical Composition %: Ni 50.5%, Mn .60% max, Si .30% max, C .005% max, Cr .25% max, Co .10% max, P .025% max, S .025% max, Fe Balance		
Coeff. of Lin. Expansion, X 10⁻⁶: 10.0 (30-400°C) Specific Heat: .114 cal./gm @ 20°C		
Conductivity: 13 w/mK	Specific Gravity: 8.25	
Temp. Coeff. of Resistance: .0035	Elongation: 20-40%	
Melting Point: ~1,430°C (~2,606°F)	Yield Point: 36,000-43,000	
Max Operating Temp: ~600°C (~1,112°F)	Soft Tensile: 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 ²)
B&S	Inches	Mm						
13	0.072	1.83	0.050	54.54	14.5	3.44	69.17	0.00407
14	0.064	1.63	0.063	38.30	11.4	5.51	87.43	0.00322
15	0.057	1.45	0.079	27.06	9.09	8.73	110.0	0.00256
16	0.051	1.29	0.099	19.38	7.21	13.76	138.7	0.00203
17	0.045	1.15	0.127	13.32	5.72	22.28	174.9	0.00161
18	0.04	1.02	0.161	9.352	4.48	36.03	223.4	0.00126
19	0.036	0.912	0.199	6.817	3.62	54.95	276.0	0.00102
20	0.032	0.812	0.252	4.788	2.86	88.22	350.2	0.000804
21	0.0285	0.723	0.318	3.383	2.27	140.2	441.3	0.000638
22	0.0253	0.644	0.403	2.366	1.80	223.8	555.3	0.000507
23	0.0226	0.573	0.505	1.687	1.42	354.6	702.1	0.000401
24	0.0201	0.51	0.639	1.187	1.12	572.6	896.6	0.000314
25	0.0179	0.455	0.805	0.838	0.902	892.5	1,108	0.000254
26	0.0159	0.405	1.021	0.587	0.707	1,444	1,415	0.000199
27	0.0142	0.361	1.280	0.418	0.561	2,280	1,782	0.000158
28	0.0126	0.321	1.625	0.292	0.444	3,660	2,252	0.000125
29	0.0113	0.286	2.021	0.211	0.355	5,688	2,815	0.000100
30	0.01	0.255	2.580	0.146	0.279	9,253	3,586	0.0000785
31	0.0089	0.227	3.257	0.103	0.222	14,648	4,497	0.0000626
32	0.008	0.202	4.031	0.075	0.176	22,882	5,676	0.0000496
33	0.0071	0.18	5.118	0.052	0.140	36,571	7,145	0.0000394
34	0.0063	0.16	6.500	0.037	0.111	58,656	9,023	0.0000312
35	0.0056	0.143	8.227	0.026	0.0877	93,772	11,398	0.0000247
36	0.005	0.127	10.32	0.0183	0.0696	148,235	14,364	0.0000196
37	0.0045	0.113	12.74	0.0133	0.0540	235,982	18,522	0.0000152
38	0.004	0.101	16.13	0.0094	0.0448	360,293	22,344	0.0000126
39	0.0035	0.09	21.06	0.0063	0.0348	605,659	28,757	0.00000979
40	0.0031	0.08	26.85	0.0044	0.0277	970,255	36,140	0.00000779
41	0.00275	0.07	34.12	0.0030	0.0219	1,559,196	45,703	0.00000616
42	0.0025	0.063	41.28	0.00228	0.0173	2,386,370	57,809	0.00000487
43	0.00225	0.057	50.96	0.00166	0.0135	3,775,706	74,087	0.00000380
44	0.0020	0.051	64.50	0.00117	0.0112	5,783,052	89,660	0.00000314
45	0.00175	0.044	84.24	0.00078	0.0086	9,760,327	115,857	0.00000243
46	0.0015	0.038	114.67	0.00049	0.0071	16,060,837	140,065	0.00000201
47	0.0014	0.036	131.63	0.00040	0.0055	24,064,118	182,813	0.00000154
48	0.0013	0.033	152.66	0.00032	0.0043	35,520,140	232,671	0.00000121