

Resistance Wire for Low Temp Heating or Resistors Nickel-Copper Alloy - A60

$$I = \text{Current}$$

$$I^2/\Omega = \frac{I^2 C_t}{p} \quad C_t = \text{Temperature factor}$$

$$p = \text{Surface load W/in}^2$$

Common Names: Alloy 60, CuNi 60, 60 Alloy, MWS-60, Cuprothal® 60, Lohm, HAI-60, Cu-Ni 6, Alloy 260, Nickel Alloy 60

Uses: Alloy exhibits low resistivity and high temperature coefficient of resistance. Typical applications include voltage regulators, timing devices, temperature sensitive resistors, temperature compensating devices, motor control, heating wires and cables, precision and vitreous resistors, potentiometers, and low temperature heating applications.

Composition

Ni	Cr	Fe	Al	Si	Mn	Cu	C	Ti	Mo	W
6%	None/Trace	None/Trace	None/Trace	None/Trace	None/Trace	94%	None/Trace	None/Trace	None/Trace	None/Trace

Technical Data

Resistivity (Ω/cm)	60	Resistivity (Ω/sqmf)	47
Resistivity (μΩ/cm)	9.98	Nom. Temp. Coeff. of Resistance (TCR)	0.00050
Std. Res. Tol. <.020"	5%	Std. Res. Tol. >.020"	3%
Thermal EMF vs. Cu	-0.022	Specific Heat (20°C)	0.092 cal/g
Density (g/cm³)	8.89	Density (lb/in³)	0.321
Thermal Conductivity	0.90 W/cm/°C	Coeff. of Linear Expansion (X 10⁻⁶)	16.20 in/in/°C
Approx. Melting Point	1100°C	Max. Continuous Operating Temp.	300°C
UTS – Hard (KPSI)	70	YTS Tensile – Hard (KPSI)	
UTS – Stress Relieved (KPSI)		YTS Tensile – Stress Relieved (KPSI)	
UTS – Annealed (KPSI)	35	YTS Tensile – Annealed (KPSI)	
Magnetic Attraction	None	Emissivity – fully oxidized	
Designations/Specifications	ASTM = B267	Forms Available	Wire, Ribbon

Alloy Data

Gage AWG	Diameter Inch	Resistance at 68° F Ω/ft	Resistance at 68° F Ω/lb	Weight lb/1000 ft	Surface area in²/ft	in²/Ω at 68°F
000	0.4096	0.0004	0.0007	507.6761	15.4432	43191.2395
00	0.3648	0.0005	0.0011	402.6049	13.7525	30502.4085
0	0.3249	0.0006	0.0018	319.2797	12.2470	21541.3342
1	0.2893	0.0007	0.0028	253.2000	10.9062	15212.8669
2	0.2576	0.0009	0.0045	200.7964	9.7123	10743.5926
3	0.2294	0.0011	0.0072	159.2386	8.6490	7587.3129
4	0.2043	0.0014	0.0114	126.2817	7.7022	5358.2930
5	0.1819	0.0018	0.0181	100.1458	6.8590	3784.1202
6	0.1620	0.0023	0.0288	79.4191	6.1081	2672.4119
7	0.1443	0.0029	0.0458	62.9822	5.4394	1887.3040
8	0.1285	0.0036	0.0728	49.9470	4.8439	1332.8471
9	0.1144	0.0046	0.1157	39.6098	4.3136	941.2799
10	0.1019	0.0058	0.1840	31.4119	3.8414	664.7483
11	0.0907	0.0073	0.2925	24.9107	3.4209	469.4569
12	0.0808	0.0092	0.4651	19.7551	3.0464	331.5387
13	0.0720	0.0116	0.7396	15.6665	2.7129	234.1384
13.5	0.0679	0.0130	0.9326	13.9514	2.5601	196.7623
14	0.0641	0.0146	1.1760	12.4241	2.4159	165.3526
14.5	0.0605	0.0164	1.4829	11.0639	2.2798	138.9570
15	0.0571	0.0184	1.8699	9.8527	2.1514	116.7749
15.5	0.0539	0.0207	2.3579	8.7741	2.0302	98.1338
16	0.0508	0.0232	2.9732	7.8135	1.9159	82.4685
16.5	0.0480	0.0261	3.7492	6.9582	1.8080	69.3038
17	0.0453	0.0293	4.7277	6.1964	1.7061	58.2407
17.5	0.0427	0.0329	5.9615	5.5181	1.6100	48.9436
18	0.0403	0.0369	7.5173	4.9140	1.5194	41.1306
18.5	0.0380	0.0415	9.4791	4.3760	1.4338	34.5648

Gage AWG	Diameter Inch	Resistance at 68° F Ω/ft	Resistance at 68° F Ω/lb	Weight Lb/1000 ft	Surface area in ² /ft	in ² /Ω at 68°F
19	0.0359	0.0466	11.9530	3.8970	1.3530	29.0471
19.5	0.0339	0.0523	15.0725	3.4703	1.2768	24.4103
20	0.0320	0.0587	19.0061	3.0904	1.2049	20.5136
20.5	0.0302	0.0660	23.9662	2.7521	1.1370	17.2390
21	0.0285	0.0741	30.2209	2.4508	1.0730	14.4871
21.5	0.0269	0.0832	38.1079	2.1825	1.0126	12.1745
22	0.0253	0.0934	48.0533	1.9436	0.9555	10.2310
22.5	0.0239	0.1049	60.5942	1.7308	0.9017	8.5978
23	0.0226	0.1178	76.4079	1.5413	0.8509	7.2253
23.5	0.0213	0.1322	96.3488	1.3726	0.8030	6.0719
24	0.0201	0.1485	121.4937	1.2223	0.7578	5.1026
24.5	0.0190	0.1668	153.2010	1.0885	0.7151	4.2881
25	0.0179	0.1873	193.1832	0.9693	0.6748	3.6036
25.5	0.0169	0.2103	243.5998	0.8632	0.6368	3.0283
26	0.0159	0.2361	307.1741	0.7687	0.6009	2.5449
26.5	0.0150	0.2652	387.3400	0.6846	0.5671	2.1387
27	0.0142	0.2978	488.4274	0.6096	0.5351	1.7973
27.5	0.0134	0.3344	615.8965	0.5429	0.5050	1.5104
28	0.0126	0.3755	776.6322	0.4835	0.4766	1.2693
29	0.0113	0.4735	1234.8971	0.3834	0.4244	0.8964
30	0.0100	0.5970	1963.5690	0.3040	0.3779	0.6330
31	0.0089	0.7528	3122.2059	0.2411	0.3366	0.4471
32	0.0080	0.9493	4964.5160	0.1912	0.2997	0.3157
33	0.0071	1.1970	7893.9122	0.1516	0.2669	0.2230
34	0.0063	1.5094	12551.8480	0.1203	0.2377	0.1575
35	0.0056	1.9034	19958.2773	0.0954	0.2117	0.1112
36	0.0050	2.4001	31734.9948	0.0756	0.1885	0.0785
37	0.0045	3.0265	50460.7627	0.0600	0.1679	0.0555
38	0.0040	3.8164	80235.9851	0.0476	0.1495	0.0392
39	0.0035	4.8123	127580.5788	0.0377	0.1331	0.0277
40	0.0031	6.0683	202861.6471	0.0299	0.1185	0.0195
41	0.0028	7.6519	322563.5770	0.0237	0.1056	0.0138
42	0.0025	9.6489	512897.6457	0.0188	0.0940	0.0097
43	0.0022	12.1671	815541.5357	0.0149	0.0837	0.0069
44	0.0020	15.3424	1296765.5479	0.0118	0.0746	0.0049
45	0.0018	19.3465	2061943.8893	0.0094	0.0664	0.0034
46	0.0016	24.3955	3278628.5924	0.0074	0.0591	0.0024
47	0.0014	30.7622	5213238.5863	0.0059	0.0526	0.0017
48	0.0012	38.7905	8289397.7748	0.0047	0.0469	0.0012
49	0.0011	48.9140	13180696.4770	0.0037	0.0418	0.0009
50	0.0010	61.6795	20958188.3195	0.0029	0.0372	0.0006

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