

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

$$in^2/\Omega = \frac{I^2 C_t}{p}$$

I = Current
C_t = Temperature factor
p = Surface load W/in²

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 ²)	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/cm ³)	8.89	Density (lb/in ³)	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

Diameter mm	Resistance at 20° C Ω/m	Resistance at 20° C Ω/kg	Weight kg/1000 m	Surface area cm ² /m	cm ² /Ω at 20°C
10.4049	0.0012	0.0016	755.5052	326.8804	278652.6007
9.2658	0.0015	0.0025	599.1420	291.0952	196789.3388
8.2515	0.0019	0.0039	475.1405	259.2276	138976.0718
7.3481	0.0024	0.0062	376.8030	230.8486	98147.3319
6.5437	0.0030	0.0099	298.8180	205.5765	69313.3618
5.8273	0.0037	0.0158	236.9731	183.0710	48950.3080
5.1894	0.0047	0.0251	187.9279	163.0293	34569.5634
4.6213	0.0059	0.0399	149.0334	145.1817	24413.6301
4.1154	0.0075	0.0634	118.1887	129.2880	17241.3325
3.6648	0.0095	0.1009	93.7278	115.1342	12176.1304
3.2636	0.0119	0.1604	74.3294	102.5299	8598.9962
2.9063	0.0150	0.2551	58.9458	91.3054	6072.7615
2.5882	0.0190	0.4056	46.7461	81.3098	4288.6903
2.3048	0.0239	0.6449	37.0713	72.4084	3028.7481
2.0525	0.0301	1.0254	29.3988	64.4815	2138.9549
1.8278	0.0380	1.6305	23.3143	57.4224	1510.5673
1.7249	0.0427	2.0560	20.7620	54.1881	1269.4316
1.6277	0.0479	2.5926	18.4890	51.1361	1066.7891
1.5360	0.0538	3.2692	16.4650	48.2559	896.4948
1.4495	0.0604	4.1224	14.6625	45.5380	753.3851
1.3679	0.0679	5.1983	13.0573	42.9731	633.1203
1.2908	0.0762	6.5549	11.6278	40.5527	532.0537
1.2181	0.0856	8.2656	10.3549	38.2686	447.1206

Diameter mm	Resistance at 20° C Ω/m	Resistance at 20° C Ω/kg	Weight kg/1000 m	Surface area cm ² /m	cm ² /Ω at 20°C
1.1495	0.0961	10.4227	9.2213	36.1132	375.7456
1.0848	0.1079	13.1428	8.2118	34.0792	315.7644
1.0237	0.1212	16.5728	7.3128	32.1597	265.3581
0.9660	0.1361	20.8979	6.5122	30.3483	222.9983
0.9116	0.1528	26.3519	5.7993	28.6390	187.4006
0.8603	0.1716	33.2291	5.1644	27.0260	157.4853
0.8118	0.1927	41.9012	4.5991	25.5038	132.3456
0.7661	0.2164	52.8365	4.0956	24.0673	111.2189
0.7229	0.2430	66.6257	3.6472	22.7117	93.4647
0.6822	0.2729	84.0136	3.2479	21.4325	78.5447
0.6438	0.3064	105.9394	2.8924	20.2254	66.0064
0.6075	0.3441	133.5873	2.5757	19.0862	55.4697
0.5733	0.3864	168.4507	2.2937	18.0112	46.6149
0.5410	0.4339	212.4127	2.0426	16.9967	39.1736
0.5106	0.4872	267.8478	1.8190	16.0394	32.9203
0.4818	0.5471	337.7504	1.6199	15.1360	27.6651
0.4547	0.6144	425.8960	1.4425	14.2835	23.2489
0.4291	0.6899	537.0457	1.2846	13.4790	19.5376
0.4049	0.7747	677.2030	1.1440	12.7198	16.4188
0.3821	0.8700	853.9385	1.0188	12.0034	13.7978
0.3606	0.9769	1076.7981	0.9072	11.3273	11.5952
0.3403	1.0970	1357.8193	0.8079	10.6893	9.7442
0.3211	1.2318	1712.1809	0.7195	10.0873	8.1887
0.2859	1.5533	2722.4821	0.5706	8.9830	5.7830
0.2546	1.9587	4328.9285	0.4525	7.9996	4.0841
0.2268	2.4699	6883.2857	0.3588	7.1238	2.8842
0.2019	3.1145	10944.8843	0.2846	6.3439	2.0369
0.1798	3.9273	17403.0975	0.2257	5.6494	1.4385
0.1601	4.9523	27672.0881	0.1790	5.0310	1.0159
0.1426	6.2447	44000.4696	0.1419	4.4802	0.7174
0.1270	7.8744	69963.6874	0.1125	3.9897	0.5067
0.1131	9.9295	111246.9389	0.0893	3.5529	0.3578
0.1007	12.5208	176890.0679	0.0708	3.1640	0.2527
0.0897	15.7885	281267.0302	0.0561	2.8176	0.1785
0.0799	19.9090	447233.3763	0.0445	2.5092	0.1260
0.0711	25.1048	711130.9588	0.0353	2.2345	0.0890
0.0633	31.6566	1130745.7524	0.0280	1.9898	0.0629
0.0564	39.9183	1797961.3187	0.0222	1.7720	0.0444
0.0502	50.3361	2858878.6620	0.0176	1.5780	0.0313
0.0447	63.4727	4545808.1434	0.0140	1.4053	0.0221
0.0398	80.0377	7228138.7634	0.0111	1.2514	0.0156
0.0355	100.9259	11493223.7205	0.0088	1.1144	0.0110
0.0316	127.2654	18274993.8558	0.0070	0.9924	0.0078
0.0281	160.4789	29058461.6249	0.0055	0.8838	0.0055
0.0251	202.3604	46204896.0820	0.0044	0.7870	0.0039

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