



HSM Wire International, Inc

Ph: 330-244-8501 Fax: 330-244-8561

www.hsmwire.com



Alloy 180 - Precision Resistance Alloys

Chemical Composition

Nominal Composition	Cu%	Ni%	
	Balance	23	

Mechanical Properties

Melting Point		1,100°C (2,012°F)	
Max Operating Temp		540°C (1,004°F)	
Soft Tensile		39 - 51,000 PSI	
Elongation		20 - 40%	
Yield Point		20 - 40,000 PSI	

Physical Properties

Ω/cir.mil.ft:	180
Conductivity:	35 w / m K
Coeffiecent of Linear Expansion , 10 ⁻⁶ :	15.9 (20 - 500°C)
Temp. coeffiecent of Resistance:	0.00013
Weight/Density:	0.322 lbs/cu.in. (8.9 g/cm ³)
Specific Heat:	0.092 cal./gm @ 20°C
Specific Gravity:	8.90

*To be used as a guideline only.

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Resistance Chart

Diameter			Resistance @ 68°F/20°C Ω/ft	Sq. in/Ω	Weight	Ω/lb.	Ft/Lb	Cross Sectional area (in ²)
AWG	Inches	Mm		68°F	lb/1000 ft			
20	0.032	0.812	0.176	6.86	3.11	56.20	320.0	0.000804
21	0.0285	0.723	0.222	4.848	2.47	89.30	403.0	0.000638
22	0.0253	0.644	0.281	3.392	1.96	143.9	512.0	0.000507
23	0.0226	0.573	0.352	2.418	1.55	225.0	641.0	0.000401
24	0.0201	0.51	0.446	1.701	1.21	368.0	819.0	0.000314
25	0.0179	0.455	0.562	1.201	0.981	574.0	1,023	0.000254
26	0.0159	0.405	0.712	0.842	0.769	922.0	1,296	0.000199
27	0.0142	0.361	0.893	0.600	0.611	1,450	1,625	0.000158
28	0.0126	0.321	1.134	0.419	0.483	2,347	2,071	0.000125
29	0.0113	0.286	1.410	0.302	0.386	3,610	2,567	0.000100
30	0.01	0.255	1.800	0.209	0.303	5,900	3,278	0.0000785
31	0.0089	0.227	2.272	0.148	0.242	9,400	4,138	0.0000626
32	0.008	0.202	2.813	0.107	0.192	14,400	5,121	0.0000496
33	0.0071	0.18	3.57	0.075	0.152	23,216	6,502	0.0000394
34	0.0063	0.16	4.54	0.052	0.121	37,450	8,259	0.0000312
35	0.0056	0.143	5.74	0.037	0.0954	59,990	10,452	0.0000247
36	0.005	0.127	7.20	0.0262	0.0757	94,400	13,112	0.0000196
37	0.0045	0.113	8.89	0.0191	0.0587	143,880	16,187	0.0000152
38	0.004	0.101	11.25	0.0134	0.0487	230,470	20,487	0.0000126
39	0.0035	0.09	14.69	0.0090	0.0378	393,160	26,759	0.00000979
40	0.0031	0.08	18.73	0.0062	0.0301	638,880	34,110	0.00000779
41	0.0028	0.07	23.80	0.0044	0.0238	999,975	42,013	0.00000616
42	0.0025	0.063	28.80	0.00327	0.0188	1,530,476	53,142	0.00000487

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