



HSM Wire International, Inc

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

www.hsmwire.com



Alloy 294 Resistors Nickel-Copper Alloy

Applications: Motor control, heating wires and cables; precision and vitreous, potentiometers.

Chemical Composition

Nominal Composition	Cu%	Ni%	Cr & Fe	Al & Si	Mn & Ti	Mo & W
	55	45	None/Trace	None/Trace	None/Trace	None/Trace

Technical Data

Resistivity (Ω/cm)	294
Resistivity (Ω/cm)	48.88
Resistivity ($\Omega/sqmf$)	230
Std Resistance Tolerance < 0.020"	3%
Std Resistance Tolerance < 0.020"	5%
Density (g/cm^3)	8.99
Density (lbs/in^3)	0.3218
UTS - Hard (KPSI)	135
UTS - Stress Relieved (KPSI)	110
UTS - Annealed (KPSI)	60
Magnetic Attraction	None
Designations/Specifications	ASTM-B267
Nom. Temp. Coeff. Of Resistance (TCR)	0.00002
Thermal EMF vs Cu	-0.045
Specific Heat (20°C) (Cal/g)	0.094
Thermal Conductivity (W/cm/°C)	0.21
Coeff. Of Linear Expansion 10^{-6} (in/in/°C)	14.90
Max. Continuous Operating Temp. (°C)	550

Resistance Chart

Diameter			Resistance @ 68°F Ω/ft	Resistance @ 68°F Ω/lb	Weight lb/1000 ft	Surface Area in^2/ft	in^2 / Ω @ 68°F	Cross Sectional area (in^2)
AWG	Inches	Mm						
20	0.0320	0.813	0.2878	92.8924	3.0983	1.2049	4.1864	0.000804
21	0.0285	0.724	0.3629	147.7052	2.4571	1.0730	2.9565	0.000638
22	0.0253	0.643	0.4576	234.8611	1.9485	0.9555	2.0880	0.000507
23	0.0226	0.574	0.5771	373.4448	1.5453	0.8509	1.4746	0.000401
24	0.0201	0.511	0.7277	593.8022	1.2254	0.7578	1.0414	0.000314
25	0.0179	0.455	0.9176	944.1852	0.9718	0.6748	0.7254	0.000254

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R1.06.09.2013



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Diameter			Resistance @ 68°F Ω/ft	Resistance @ 68°F Ω/lb	Weight lb/1000 ft	Surface Area in ² /ft	in ² / Ω @ 68°F	Cross Sectional area (in ²)
AWG	Inches	Mm						
26	0.0159	0.404	1.1570	1501.3176	0.7707	0.6009	0.5194	0.000199
27	0.0142	0.361	1.4590	2387.1953	0.6112	0.5351	0.3668	0.000158
28	0.0126	0.320	1.8398	3795.8000	0.4847	0.4766	0.2590	0.000125
29	0.0113	0.287	2.3199	6035.5757	0.3844	0.4244	0.1829	0.000100
30	0.0100	0.254	2.9254	9596.9687	0.3048	0.3779	0.1292	0.0000785
31	0.0089	0.226	3.6888	15259.8217	0.2417	0.3366	0.0912	0.0000626
32	0.0080	0.203	4.6516	24264.1364	0.1917	0.2997	0.0644	0.0000496
33	0.0071	0.180	5.8655	38581.5985	0.1520	0.2669	0.0455	0.0000394
34	0.0063	0.160	7.3963	61347.3202	0.1206	0.2317	0.0321	0.0000312
35	0.0056	0.142	9.3266	97546.3393	0.0956	0.2117	0.0227	0.0000247
36	0.0050	0.127	11.7606	155105.1989	0.0758	0.1885	0.0160	0.0000196
37	0.0045	0.114	14.8298	246627.6326	0.0601	0.1679	0.0113	0.0000152
38	0.0040	0.102	18.7001	392154.4190	0.0477	0.1495	0.0080	0.0000126
39	0.0035	0.089	23.5804	623551.7355	0.0378	0.1331	0.0056	0.00000979
40	0.0031	0.079	29.7344	991488.9340	0.0300	0.1185	0.0040	0.00000779

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R1.06.09.2013