

Resistance Heating Alloy Nichrome 80 (UNS N06003)



Durable Nichrome 80 resistance alloy is a traditional heating material for the industrial applications. It heats up quickly upon the passage of electricity. High service temperature up to 1200oC. Great oxidation and corrosion resistance at the elevated temperatures. It is commonly used in heating wires, coils, hair dryers, ovens, atomizers, metal sheath tubular elements and precision heating applications.

Nichrome Ni80Cr20 has lower high resistance per foot. It offers more increment in resistance per foot with increasing temperature.

Chemical Composition

Nickel (Ni) 80 %

Chromium (Cr) 20 %

Physical Properties

Density	8.31 g/cm ³ or 0.303 lb/in ³
Electrical resistivity	108 microhm • cm at 20oC 650 ohm. Circ. Mil/ft at 20oC
Highest service temperature	1200oC or 2190oF
Melting temperature	1400oC or 2550oF
Coefficient of thermal expansion	12.5 micro-m per m oC from 20oC to 100oC

Nichrome 80 Electric resistivity data

AWG size	Diameter (inch)	Resistance (ohms/ft)	lb / 1000 ft	Ft per lb
8	0.129 inch	0.039 ohms/ft	47.23 lb / 1000 ft	22 Ft per lb
9	0.114 inch	0.050 ohms/ft	37.44 lb / 1000 ft	26 Ft per lb
10	0.102 inch	0.063 ohms/ft	29.71 lb / 1000 ft	33 Ft per lb
11	0.091 inch	0.080 ohms/ft	23.53 lb / 1000 ft	44 Ft per lb
12	0.081 inch	0.099 ohms/ft	18.72 lb / 1000 ft	55 Ft per lb
13	0.072 inch	0.125 ohms/ft	14.83 lb / 1000 ft	66 Ft per lb
14	0.064 inch	0.160 ohms/ft	11.75 lb / 1000 ft	86 Ft per lb
15	0.057 inch	0.200 ohms/ft	9.33 lb / 1000 ft	108 Ft per lb
16	0.051 inch	0.252 ohms/ft	7.4 lb / 1000 ft	135 Ft per lb
17	0.045 inch	0.317 ohms/ft	5.9 lb / 1000 ft	171 Ft per lb
18	0.040 inch	0.400 ohms/ft	4.65 lb / 1000 ft	214 Ft per lb
19	0.036 inch	0.504 ohms/ft	3.69 lb / 1000 ft	271 Ft per lb

20	0.032 inch	0.635 ohms/ft	2.93 lb / 1000 ft	341 Ft per lb
21	0.029 inch	0.800 ohms/ft	2.32 lb / 1000 ft	430 Ft per lb
22	0.025 inch	1.016 ohms/ft	1.83 lb / 1000 ft	547 Ft per lb
23	0.023 inch	1.3 ohms/ft	1.5 lb / 1000 ft	686 Ft per lb
24	0.020 inch	1.61 ohms/ft	1.16 lb / 1000 ft	866 Ft per lb
25	0.018 inch	2.03 ohms/ft	0.92 lb / 1000 ft	1091 Ft per lb
26	0.016 inch	2.57 ohms/ft	0.72 lb / 1000 ft	1384 Ft per lb
27	0.014 inch	3.22 ohms/ft	0.6 lb / 1000 ft	1734 Ft per lb
28	0.013 inch	4.1 ohms/ft	0.5 lb / 1000 ft	2202 Ft per lb
29	0.011 inch	5.1 ohms/ft	0.4 lb / 1000 ft	2738 Ft per lb
30	0.010 inch	6.5 ohms/ft	0.3 lb / 1000 ft	3496 Ft per lb
31	0.009 inch	8.21 ohms/ft	0.23 lb / 1000 ft	4414 Ft per lb
32	0.008 inch	10.2 ohms/ft	0.2 lb / 1000 ft	5463 Ft per lb
33	0.007 inch	12.9 ohms/ft	0.144 lb / 1000 ft	6936 Ft per lb
34	0.006 inch	16.4 ohms/ft	0.114 lb / 1000 ft	8809 Ft per lb
35	0.0056 inch	20.73 ohms/ft	0.10 lb / 1000 ft	11150 Ft per lb
36	0.0050 inch	26 ohms/ft	0.073 lb / 1000 ft	1399 Ft per lb
37	0.0045 inch	32.099 ohms/ft	0.06 lb / 1000 ft	17,27 Ft per lb
38	0.0040 inch	40.61 ohms/ft	0.05 lb / 1000 ft	21853 Ft per lb
39	0.0035 inch	53.06 ohms/ft	0.04 lb / 1000 ft	28,543 Ft per lb
40	0.0031 inch	67.64 ohms/ft	0.08 lb / 1000 ft	36,400 Ft per lb
41	0.0028 inch	82.91 ohms/ft	0.022 lb / 1000 ft	44,600 Ft per lb
42	0.0025 inch	104 ohms/ft	0.02 lb / 1000 ft	55,943 Ft per lb

Diameter, mm	Sectional area, mm ²	Surface area/m, cm ² /m	Weight/m, kg/m	Resistance/m, ohms/m at 20oC
0.10 mm	0.0079 mm ²	3.142 cm ² /m	0.000066 kg/m	138.7 ohms/m
0.12 mm	0.01132 mm ²	3.8 cm ² /m	0.000095 kg/m	96.4 ohms/m
0.15 mm	0.018 mm ²	4.72 cm ² /m	0.00015 kg/m	61.7 ohms/m
0.17 mm	0.023 mm ²	5.4 cm ² /m	0.0002 kg/m	48.02 ohms/m
0.19 mm	0.0284 mm ²	5.97 cm ² /m	0.00024 kg/m	38.45 ohms/m
0.21 mm	0.035 mm ²	6.6 cm ² /m	0.0003 kg/m	31.5 ohms/m
0.25 mm	0.05 mm ²	7.9 cm ² /m	0.00041 kg/m	22.23 ohms/m
0.27 mm	0.06 mm ²	8.5 cm ² /m	0.00049 kg/m	19.05 ohms/m
0.29 mm	0.07 mm ²	9.111 cm ² /m	0.00555 kg/m	16.6 ohms/m
0.31 mm	0.0755 mm ²	9.74 cm ² /m	0.000635 kg/m	14.5 ohms/m
0.35 mm	0.09621 mm ²	11 cm ² /m	0.000809 kg/m	11.34 ohms/m
0.40 mm	0.126 mm ²	12.6 cm ² /m	0.00106 kg/m	8.7 ohms/m
0.45 mm	0.16 mm ²	14.14 cm ² /m	0.00134 kg/m	6.9 ohms/m
0.50 mm	0.197 mm ²	15.7 cm ² /m	0.00147 kg/m	5.56 ohms/m
0.60 mm	0.29 mm ²	18.9 cm ² /m	0.00238 kg/m	3.9 ohms/m
0.70 mm	0.39 mm ²	21.98 cm ² /m	0.003234 kg/m	2.9 ohms/m
0.80 mm	0.503 mm ²	25.14 cm ² /m	0.0043 kg/m	2.17 ohms/m

Available Forms

Wire, Strip, Rod, Mesh, Foil, Bar