

NiChrome 80

NiChrome 80, also called NiCr 80/20, is a high grade austenitic alloy. Due to its ductibility and strength at high temperature, nichrome 80 is especially suitable for applications in the electrical appliance industry. Nichrome 80 has superior life compared to Fe-Cr-Al alloys because of the extremely good adhesion properties of the surface oxide.

Specifications

UNS N06003, 2.4869, DIN 17470/17471

Chemical Composition

Grade	Ni%	Cr%	Fe%	Mn%	Si%
Nichrome 80	Bal.	20-23	Max. 1.0	Max. 1.0	1.00-1.50

Applications

Used in electrical heating elements in industrial furnaces and in appliance industry

Physical Properties

Properties	Nichrome 80
Highest application temperature	1200
Resistivity at 20°C (micro ohm · meter)	1.09
Density (gram/cm ³)	8.40
Specific heat (J/g · °C)	0.44
Thermal conductivity (KJ/m · h · °C)	60.3
Coefficient of lines expansion (×10 ⁻⁶ /°C)	18.0
Melting temperature (°C)	1400
Magnetic	Non

Temperature factor of resistivity

°C	20	100	200	300	400	500	600	700	800	900	1000	1100	1200
Ct	1	1.006	1.012	1.018	1.025	1.026	1.018	1.01	1.008	1.01	1.014	1.021	1.025

Resistance and Weight Table

Diameter (mm)	Cross Sectional Area (mm ²)	Surface Area per Meter cm ² /m	Weight per Meter kg/m	Resistance per Meter Ω/m,20°C
0.10	0.007854	3.142	0.00006597	138.8
0.12	0.01131	3.770	0.00009500	96.38
0.15	0.01767	4.712	0.0001484	61.68
0.17	0.02270	5.341	0.0001907	48.02

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Resistance Alloy

Diameter (mm)	Cross Sectional Area (mm ²)	Surface Area per Meter cm ² /m	Weight per Meter kg/m	Resistance per Meter Ω/m,20°C
0.19	0.02835	5.969	0.0002382	38.44
0.21	0.03464	6.597	0.0002909	31.47
0.25	0.04909	7.854	0.0004123	22.21
0.27	0.05726	8.482	0.0004809	19.04
0.29	0.06605	9.111	0.0005548	16.50
0.31	0.07548	9.739	0.0006340	14.44
0.35	0.09621	11.00	0.0008082	11.33
0.40	0.1257	12.57	0.001056	8.674
0.45	0.1590	14.14	0.001339	6.835
0.50	0.1963	15.71	0.001469	5.551
0.60	0.2827	18.85	0.002375	3.855
0.70	0.3848	21.99	0.003233	2.832
0.80	0.5027	25.13	0.004222	2.168
0.90	0.6362	28.27	0.005344	1.713
1.00	0.7854	31.42	0.006597	1.388
1.20	1.131	37.70	0.009500	0.9638
1.40	1.539	43.98	0.01293	0.7081
1.60	2.011	50.27	0.01689	0.5421
1.80	2.545	56.55	0.02138	0.4283
2.00	3.142	62.83	0.02639	0.3470
2.20	3.801	69.12	0.03139	0.2867
2.50	3.976	70.69	0.03340	0.2741
2.80	6.158	87.96	0.05172	0.1770
3.00	7.069	94.25	0.05938	0.1542
3.50	9.621	110.0	0.08082	0.1133
4.00	12.57	125.7	0.1056	0.08674
4.50	15.90	141.4	0.1336	0.06853
5.00	19.63	157.1	0.1649	0.05551
5.50	23.76	172.8	0.1996	0.04588
6.00	28.27	188.5	0.2375	0.03855
6.50	33.18	204.2	0.2787	0.03285
7.00	38.48	219.9	0.3233	0.02832