

Resistance Wire for Low Temp Heating or Resistors Nickel-Chrome Alloy - EVANR

$$i^2/\Omega = \frac{l^2 C_t}{p}$$

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

Common Names: Alloy 800, Stablohm 800, Nikrothal® LX, Chromel® R, Karma, Evanohm® R, HAI-431, Moleculoy®

Uses: Electronic components where a high resistivity together with a low temperature coefficient of resistance is required such as precision resistors.

Composition

Ni	Cr	Fe	Al	Si	Mn	Cu	C	Ti	Mo	W
75%	18 - 20%	None/Trace	2.5%	0.60%	2.2%	1.7%	None/Trace	None/Trace	None/Trace	None/Trace

Technical Data

Resistivity (Ω/cm^f)	800	Resistivity (Ω/sqmf)	628
Resistivity (μΩ/cm)	133	Nom. Temp. Coeff. of Resistance (TCR)	0.00002
Std. Res. Tol. <.020"	5%	Std. Res. Tol. >.020"	3%
Thermal EMF vs. Cu	+1.0	Specific Heat (20°C)	0.104 cal/g
Density (g/cm³)	8.11	Density (lb/in³)	0.293
Thermal Conductivity	0.131 W/cm/°C	Coeff. of Linear Expansion (X 10⁻⁶)	12.20 in/in/°C
Approx. Melting Point	1400°C	Max. Continuous Operating Temp.	300°C
UTS – Hard (KPSI)	200	YTS Tensile – Hard (KPSI)	
UTS – Stress Relieved (KPSI)	175	YTS Tensile – Stress Relieved (KPSI)	
UTS – Annealed (KPSI)	100	YTS Tensile – Annealed (KPSI)	
Magnetic Attraction	None	Emissivity – fully oxidized	
Designations/Specifications	ASTM = B267	Forms Available	Wire, Ribbon, Square

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	0.0156	0.0227	689.6045	326.8804	20898.9451
9.2658	0.0197	0.0361	546.8804	291.0952	14759.2004
8.2515	0.0249	0.0573	433.6953	259.2276	10423.2054
7.3481	0.0314	0.0912	343.9355	230.8486	7361.0499
6.5437	0.0395	0.1450	272.7529	205.5765	5198.5021
5.8273	0.0499	0.2305	216.3025	183.0710	3671.2731
5.1894	0.0629	0.3666	171.5355	163.0293	2592.7173
4.6213	0.0793	0.5829	136.0336	145.1817	1831.0223
4.1154	0.1000	0.9268	107.8794	129.2880	1293.0999
3.6648	0.1261	1.4737	85.5521	115.1342	913.2098
3.2636	0.1590	2.3432	67.8458	102.5299	644.9247
2.9063	0.2005	3.7259	53.8041	91.3054	455.4571
2.5882	0.2528	5.9245	42.6685	81.3098	321.6518
2.3048	0.3188	9.4203	33.8376	72.4084	227.1561
2.0525	0.4020	14.9789	26.8344	64.4815	160.4216
1.8278	0.5069	23.8174	21.2806	57.4224	113.2925
1.7249	0.5692	30.0333	18.9509	54.1881	95.2074
1.6277	0.6391	37.8713	16.8763	51.1361	80.0092
1.5360	0.7177	47.7549	15.0288	48.2559	67.2371
1.4495	0.8059	60.2179	13.3835	45.5380	56.5039
1.3679	0.9050	75.9335	11.9183	42.9731	47.4840
1.2908	1.0163	95.7505	10.6136	40.5527	39.9040
1.2181	1.1412	120.7394	9.4517	38.2686	33.5340
1.1495	1.2815	152.2498	8.4169	36.1132	28.1809
1.0848	1.4390	191.9837	7.4955	34.0792	23.6823
1.0237	1.6159	242.0873	6.6749	32.1597	19.9019
0.9660	1.8146	305.2669	5.9442	30.3483	16.7249
0.9116	2.0376	384.9350	5.2934	28.6390	14.0550
0.8603	2.2881	485.3948	4.7139	27.0260	11.8114
0.8118	2.5694	612.0724	4.1979	25.5038	9.9259

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
0.7661	2.8853	771.8101	3.7383	24.0673	8.3414
0.7229	3.2400	973.2360	3.3291	22.7117	7.0099
0.6822	3.6383	1227.2297	2.9646	21.4325	5.8909
0.6438	4.0855	1547.5102	2.6401	20.2254	4.9505
0.6075	4.5878	1951.3772	2.3510	19.0862	4.1602
0.5733	5.1518	2460.6447	2.0937	18.0112	3.4961
0.5410	5.7851	3102.8201	1.8645	16.9967	2.9380
0.5106	6.4963	3912.5895	1.6604	16.0394	2.4690
0.4818	7.2949	4933.6914	1.4786	15.1360	2.0749
0.4547	8.1917	6221.2789	1.3167	14.2835	1.7437
0.4291	9.1987	7844.8990	1.1726	13.4790	1.4653
0.4049	10.3295	9892.2492	1.0442	12.7198	1.2314
0.3821	11.5993	12473.9138	0.9299	12.0034	1.0348
0.3606	13.0253	15729.3374	0.8281	11.3273	0.8696
0.3403	14.6265	19834.3566	0.7374	10.6893	0.7308
0.3211	16.4246	25010.6977	0.6567	10.0873	0.6142
0.2859	20.7111	39768.6808	0.5208	8.9830	0.4337
0.2546	26.1162	63234.8604	0.4130	7.9996	0.3063
0.2268	32.9320	100547.6544	0.3275	7.1238	0.2163
0.2019	41.5266	159877.4904	0.2597	6.3439	0.1528
0.1798	52.3641	254215.8951	0.2060	5.6494	0.1079
0.1601	66.0300	404220.2635	0.1634	5.0310	0.0762
0.1426	83.2624	642737.2347	0.1295	4.4802	0.0538
0.1270	104.9921	1021995.1599	0.1027	3.9897	0.0380
0.1131	132.3928	1625040.6085	0.0815	3.5529	0.0268
0.1007	166.9445	2583923.1758	0.0646	3.1640	0.0190
0.0897	210.5134	4108610.5439	0.0512	2.8176	0.0134
0.0799	265.4529	6532965.3604	0.0406	2.5092	0.0095
0.0711	334.7304	10387851.5485	0.0322	2.2345	0.0067
0.0633	422.0878	16517378.2256	0.0256	1.9898	0.0047
0.0564	532.2437	26263735.3041	0.0203	1.7720	0.0033
0.0502	671.1479	41761094.4487	0.0161	1.5780	0.0024
0.0447	846.3030	66402931.2418	0.0127	1.4053	0.0017
0.0398	1067.1700	105585098.6599	0.0101	1.2514	0.0012
0.0355	1345.6784	167887363.5626	0.0080	1.1144	0.0008
0.0316	1696.8716	266952128.6785	0.0064	0.9924	0.0006
0.0281	2139.7186	424471726.1250	0.0050	0.8838	0.0004
0.0251	2698.1392	674938413.7579	0.0040	0.7870	0.0003

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