

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/cm²)	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

Gage AWG	Diameter Inch	Resistance at 68° F Ω/ft	Resistance at 68° F Ω/lb	Weight lb/1000 ft	Surface area in ² /ft	in ² /Ω at 68°F
000	0.4096	0.0048	0.0103	463.3928	15.4432	3239.3430
00	0.3648	0.0060	0.0164	367.4867	13.7525	2287.6806
0	0.3249	0.0076	0.0260	291.4298	12.2470	1615.6001
1	0.2893	0.0096	0.0414	231.1140	10.9062	1140.9650
2	0.2576	0.0121	0.0658	183.2815	9.7123	805.7694
3	0.2294	0.0152	0.1046	145.3486	8.6490	569.0485
4	0.2043	0.0192	0.1663	115.2665	7.7022	401.8720
5	0.1819	0.0242	0.2644	91.4104	6.8590	283.8090
6	0.1620	0.0305	0.4204	72.4916	6.1081	200.4309
7	0.1443	0.0384	0.6684	57.4884	5.4394	141.5478
8	0.1285	0.0485	1.0629	45.5903	4.8439	99.9635
9	0.1144	0.0611	1.6900	36.1547	4.3136	70.5960
10	0.1019	0.0770	2.6873	28.6719	3.8414	49.8561
11	0.0907	0.0972	4.2730	22.7378	3.4209	35.2093
12	0.0808	0.1225	6.7943	18.0319	3.0464	24.8654
13	0.0720	0.1545	10.8034	14.2999	2.7129	17.5604
13.5	0.0679	0.1735	13.6229	12.7344	2.5601	14.7572
14	0.0641	0.1948	17.1781	11.3403	2.4159	12.4014
14.5	0.0605	0.2188	21.6613	10.0989	2.2798	10.4218
15	0.0571	0.2456	27.3144	8.9933	2.1514	8.7581
15.5	0.0539	0.2758	34.4429	8.0087	2.0302	7.3600
16	0.0508	0.3098	43.4317	7.1320	1.9159	6.1851
16.5	0.0480	0.3478	54.7665	6.3512	1.8080	5.1978
17	0.0453	0.3906	69.0593	5.6559	1.7061	4.3681
17.5	0.0427	0.4386	87.0823	5.0367	1.6100	3.6708
18	0.0403	0.4925	109.8090	4.4853	1.5194	3.0848
18.5	0.0380	0.5531	138.4667	3.9943	1.4338	2.5924
19	0.0359	0.6211	174.6036	3.5570	1.3530	2.1785
19.5	0.0339	0.6974	220.1714	3.1676	1.2768	1.8308
20	0.0320	0.7832	277.6314	2.8209	1.2049	1.5385

Gage AWG	Diameter Inch	Resistance at 68° F Ω/ft	Resistance at 68° F Ω/lb	Weight Lb/1000 ft	Surface area in ² /ft	in ² /Ω at 68°F
20.5	0.0302	0.8794	350.0872	2.5120	1.1370	1.2929
21	0.0285	0.9875	441.4524	2.2370	1.0730	1.0865
21.5	0.0269	1.1089	556.6620	1.9921	1.0126	0.9131
22	0.0253	1.2453	701.9388	1.7740	0.9555	0.7673
22.5	0.0239	1.3984	885.1298	1.5798	0.9017	0.6448
23	0.0226	1.5703	1116.1297	1.4069	0.8509	0.5419
23.5	0.0213	1.7633	1407.4155	1.2529	0.8030	0.4554
24	0.0201	1.9801	1774.7208	1.1157	0.7578	0.3827
24.5	0.0190	2.2235	2237.8848	0.9936	0.7151	0.3216
25	0.0179	2.4968	2821.9246	0.8848	0.6748	0.2703
25.5	0.0169	2.8038	3558.3863	0.7879	0.6368	0.2271
26	0.0159	3.1484	4487.0488	0.7017	0.6009	0.1909
26.5	0.0150	3.5355	5658.0721	0.6249	0.5671	0.1604
27	0.0142	3.9701	7134.7074	0.5565	0.5351	0.1348
27.5	0.0134	4.4582	8996.7128	0.4955	0.5050	0.1133
28	0.0126	5.0062	11344.6616	0.4413	0.4766	0.0952
29	0.0113	6.3127	18038.7702	0.3500	0.4244	0.0672
30	0.0100	7.9602	28682.8502	0.2775	0.3779	0.0475
31	0.0089	10.0377	45607.6488	0.2201	0.3366	0.0335
32	0.0080	12.6573	72519.2098	0.1745	0.2997	0.0237
33	0.0071	15.9606	115310.3903	0.1384	0.2669	0.0167
34	0.0063	20.1259	183351.2273	0.1098	0.2377	0.0118
35	0.0056	25.3784	291540.7056	0.0870	0.2117	0.0083
36	0.0050	32.0016	463569.2067	0.0690	0.1885	0.0059
37	0.0045	40.3533	737106.0210	0.0547	0.1679	0.0042
38	0.0040	50.8847	1172047.8372	0.0434	0.1495	0.0029
39	0.0035	64.1645	1863634.3940	0.0344	0.1331	0.0021
40	0.0031	80.9100	2963303.2410	0.0273	0.1185	0.0015
41	0.0028	102.0258	4711850.2031	0.0217	0.1056	0.0010
42	0.0025	128.6524	7492156.7355	0.0172	0.0940	0.0007
43	0.0022	162.2279	11913029.9417	0.0136	0.0837	0.0005
44	0.0020	204.5659	18942513.8048	0.0108	0.0746	0.0004
45	0.0018	257.9532	30119862.9570	0.0086	0.0664	0.0003
46	0.0016	325.2734	47892595.1379	0.0068	0.0591	0.0002
47	0.0014	410.1628	76152427.1316	0.0054	0.0526	0.0001
48	0.0012	517.2064	121087448.7241	0.0043	0.0469	0.0001
49	0.0011	652.1862	192537136.2515	0.0034	0.0418	0.0001
50	0.0010	822.3928	306146914.7012	0.0027	0.0372	0.0000

Information presentation property of Hyndman Industrial Products, Inc., 4031 Merchant Road, Fort Wayne, IN 46818, 260.483.6042, www.resistancewire.com

(Disclaimer) This information is provided for information purposes only "As is." Hyndman Industrial Products, Inc. makes no warranty of any kind with respect to the subject matter or accuracy of the information. Hyndman Industrial Products, Inc. specifically disclaims all warranties, expressed, implied or otherwise, including without limitation, all warranties of merchantability and fitness for a particular purpose. This publication may include technical inaccuracies or typographical errors; changes may be made to the information herein. If errors are found, please submit the correction via e-mail to: sales@resistancewire.com. Include correction and page address if possible. All trademarks referenced are the property of their respective owners. Ownership can be researched at www.uspto.gov or by contacting Hyndman Industrial Products, Inc.