

Special Alloy Wire for High Temp Heating or Thermocouple Applications - PTRH30

$$in^2/\Omega = \frac{I^2 C_t}{p}$$

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

Common Names: Platinum Rhodium; Platinum-30% Rhodium

Uses: Bare Thermocouple wire. Oxidizing or Inert. Do not insert in metal tubes. Beware of contamination. High Temperature. Common usage in the Glass Industry.

Composition

Ni	Cr	Fe	Al	Si	Mn	Cu	C	Ti	Pt	Rh
None/Trace	None/Trace	None/Trace	None/Trace	None/Trace	None/Trace	None/Trace	None/Trace	None/Trace	30%	Balance

Technical Data

Resistivity (Ω/cm ^f)	114.5	Resistivity (Ω/sqmf)	89
Resistivity (μΩ/cm)	19.04	Nom. Temp. Coeff. of Resistance (TCR)	
Std. Res. Tol. <.020"		Std. Res. Tol. >.020"	
Thermal EMF vs. Cu	-5.39	Specific Heat (20°C)	
Density (g/cm ³)	18.75	Density (lb/in ³)	0.677
Thermal Conductivity		Coeff. of Linear Expansion (X 10 ⁻⁶)	
Approx. Melting Point	2315°C	Max. Continuous Operating Temp.	1700°C
UTS – Hard (KPSI)		YTS Tensile – Hard (KPSI)	
UTS – Stress Relieved (KPSI)		YTS Tensile – Stress Relieved (KPSI)	
UTS – Annealed (KPSI)		YTS Tensile – Annealed (KPSI)	
Magnetic Attraction	None	Emissivity – fully oxidized	
Designations/Specifications	ANSI/MC96.1 TypeB	Forms Available	Wire, Ribbon, Insul.

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	0.0007	0.0006	1071.1464	15.4432	22632.9639
00	0.3648	0.0009	0.0010	849.4565	13.7525	15983.7949
0	0.3249	0.0011	0.0016	673.6487	12.2470	11288.0354
1	0.2893	0.0014	0.0026	534.2269	10.9062	7971.8080
2	0.2576	0.0017	0.0041	423.6606	9.7123	5629.8302
3	0.2294	0.0022	0.0065	335.9777	8.6490	3975.8845
4	0.2043	0.0027	0.0103	266.4420	7.7022	2807.8392
5	0.1819	0.0035	0.0164	211.2978	6.8590	1982.9451
6	0.1620	0.0044	0.0260	167.5666	6.1081	1400.3905
7	0.1443	0.0055	0.0414	132.8861	5.4394	988.9803
8	0.1285	0.0069	0.0658	105.3833	4.8439	698.4352
9	0.1144	0.0087	0.1046	83.5727	4.3136	493.2471
10	0.1019	0.0110	0.1664	66.2760	3.8414	348.3397
11	0.0907	0.0139	0.2646	52.5592	3.4209	246.0036
12	0.0808	0.0175	0.4207	41.6813	3.0464	173.7321
13	0.0720	0.0221	0.6689	33.0547	2.7129	122.6926
13.5	0.0679	0.0248	0.8435	29.4361	2.5601	103.1069
14	0.0641	0.0279	1.0636	26.2135	2.4159	86.6477
14.5	0.0605	0.0313	1.3412	23.3438	2.2798	72.8159
15	0.0571	0.0352	1.6912	20.7883	2.1514	61.1921
15.5	0.0539	0.0395	2.1326	18.5125	2.0302	51.4238
16	0.0508	0.0443	2.6892	16.4858	1.9159	43.2149
16.5	0.0480	0.0498	3.3910	14.6810	1.8080	36.3164

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
17	0.0453	0.0559	4.2760	13.0738	1.7061	30.5191
17.5	0.0427	0.0628	5.3920	11.6426	1.6100	25.6473
18	0.0403	0.0705	6.7991	10.3680	1.5194	21.5531
18.5	0.0380	0.0792	8.5736	9.2330	1.4338	18.1126
19	0.0359	0.0889	10.8111	8.2222	1.3530	15.2212
19.5	0.0339	0.0998	13.6325	7.3221	1.2768	12.7914
20	0.0320	0.1121	17.1903	6.5205	1.2049	10.7495
20.5	0.0302	0.1259	21.6766	5.8067	1.1370	9.0335
21	0.0285	0.1413	27.3338	5.1710	1.0730	7.5915
21.5	0.0269	0.1587	34.4673	4.6049	1.0126	6.3796
22	0.0253	0.1782	43.4626	4.1008	0.9555	5.3612
22.5	0.0239	0.2001	54.8053	3.6518	0.9017	4.5054
23	0.0226	0.2247	69.1084	3.2520	0.8509	3.7862
23.5	0.0213	0.2524	87.1442	2.8960	0.8030	3.1818
24	0.0201	0.2834	109.8869	2.5790	0.7578	2.6739
24.5	0.0190	0.3182	138.5650	2.2967	0.7151	2.2470
25	0.0179	0.3574	174.7275	2.0452	0.6748	1.8883
25.5	0.0169	0.4013	220.3277	1.8213	0.6368	1.5869
26	0.0159	0.4506	277.8285	1.6219	0.6009	1.3336
26.5	0.0150	0.5060	350.3357	1.4444	0.5671	1.1207
27	0.0142	0.5682	441.7658	1.2863	0.5351	0.9418
27.5	0.0134	0.6381	557.0572	1.1454	0.5050	0.7915
28	0.0126	0.7165	702.4372	1.0200	0.4766	0.6651
29	0.0113	0.9035	1116.9220	0.8089	0.4244	0.4697
30	0.0100	1.1393	1775.9807	0.6415	0.3779	0.3317
31	0.0089	1.4366	2823.9280	0.5087	0.3366	0.2343
32	0.0080	1.8116	4490.2342	0.4034	0.2997	0.1654
33	0.0071	2.2844	7139.7725	0.3199	0.2669	0.1168
34	0.0063	2.8805	11352.7155	0.2537	0.2377	0.0825
35	0.0056	3.6323	18051.5763	0.2012	0.2117	0.0583
36	0.0050	4.5802	28703.2128	0.1596	0.1885	0.0412
37	0.0045	5.7756	45640.0267	0.1265	0.1679	0.0291
38	0.0040	7.2829	72570.6928	0.1004	0.1495	0.0205
39	0.0035	9.1835	115392.2518	0.0796	0.1331	0.0145
40	0.0031	11.5802	183481.3925	0.0631	0.1185	0.0102
41	0.0028	14.6024	291747.6769	0.0501	0.1056	0.0072
42	0.0025	18.4134	463898.3050	0.0397	0.0940	0.0051
43	0.0022	23.2189	737629.3091	0.0315	0.0837	0.0036
44	0.0020	29.2785	1172879.9004	0.0250	0.0746	0.0025
45	0.0018	36.9195	1864957.4301	0.0198	0.0664	0.0018
46	0.0016	46.5548	2965406.9567	0.0157	0.0591	0.0013
47	0.0014	58.7045	4715195.2518	0.0125	0.0526	0.0009
48	0.0012	74.0252	7497475.5865	0.0099	0.0469	0.0006
49	0.0011	93.3442	11921487.2701	0.0078	0.0418	0.0004
50	0.0010	117.7050	18955961.5223	0.0062	0.0372	0.0003

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