

Special Alloy Wire for High Temp Heating or Thermocouple Applications - PTRH10

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

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

Common Names: Platinum Rhodium; Platinum-10% Rhodium

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

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	10%	Balance

Technical Data

Resistivity (Ω/cm ²)	114	Resistivity (Ω/sqmf)	89
Resistivity (μΩ/cm)	18.953	Nom. Temp. Coeff. of Resistance (TCR)	
Std. Res. Tol. <.020"		Std. Res. Tol. >.020"	
Thermal EMF vs. Cu	-2.843	Specific Heat (20°C)	
Density (g/cm ³)	20.55	Density (lb/in ³)	0.742
Thermal Conductivity		Coeff. of Linear Expansion (X 10 ⁻⁶)	
Approx. Melting Point	2315°C	Max. Continuous Operating Temp.	1450°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 TypeS	Forms Available	Wire, Ribbon, Insul.

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	0.0022	0.0013	1747.2640	326.8804	146659.2635
9.2658	0.0028	0.0020	1385.6414	291.0952	103573.3362
8.2515	0.0035	0.0032	1098.8620	259.2276	73145.3010
7.3481	0.0045	0.0051	871.4359	230.8486	51656.4905
6.5437	0.0056	0.0082	691.0791	205.5765	36480.7168
5.8273	0.0071	0.0130	548.0499	183.0710	25763.3200
5.1894	0.0090	0.0206	434.6227	163.0293	18194.5071
4.6213	0.0113	0.0328	344.6710	145.1817	12849.2790
4.1154	0.0142	0.0521	273.3361	129.2880	9074.3855
3.6648	0.0180	0.0829	216.7651	115.1342	6408.4897
3.2636	0.0227	0.1318	171.9023	102.5299	4525.7875
2.9063	0.0286	0.2096	136.3245	91.3054	3196.1902
2.5882	0.0360	0.3332	108.1101	81.3098	2257.2054
2.3048	0.0454	0.5298	85.7351	72.4084	1594.0779
2.0525	0.0573	0.8424	67.9909	64.4815	1125.7657
1.8278	0.0722	1.3395	53.9192	57.4224	795.0354
1.7249	0.0811	1.6891	48.0164	54.1881	668.1219
1.6277	0.0911	2.1299	42.7598	51.1361	561.4679
1.5360	0.1023	2.6858	38.0787	48.2559	471.8394
1.4495	0.1148	3.3867	33.9100	45.5380	396.5185
1.3679	0.1290	4.2706	30.1977	42.9731	333.2212
1.2908	0.1448	5.3851	26.8918	40.5527	280.0283
1.2181	0.1626	6.7906	23.9478	38.2686	235.3267

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
1.1495	0.1826	8.5627	21.3261	36.1132	197.7609
1.0848	0.2051	10.7974	18.9915	34.0792	166.1918
1.0237	0.2303	13.6153	16.9124	32.1597	139.6622
0.9660	0.2586	17.1686	15.0609	30.3483	117.3676
0.9116	0.2904	21.6493	13.4121	28.6390	98.6319
0.8603	0.3261	27.2993	11.9438	27.0260	82.8870
0.8118	0.3661	34.4238	10.6363	25.5038	69.6556
0.7661	0.4112	43.4077	9.4719	24.0673	58.5363
0.7229	0.4617	54.7362	8.4349	22.7117	49.1920
0.6822	0.5185	69.0212	7.5115	21.4325	41.3393
0.6438	0.5822	87.0342	6.6892	20.2254	34.7402
0.6075	0.6538	109.7483	5.9569	19.0862	29.1946
0.5733	0.7341	138.3902	5.3048	18.0112	24.5342
0.5410	0.8244	174.5071	4.7240	16.9967	20.6177
0.5106	0.9257	220.0496	4.2069	16.0394	17.3265
0.4818	1.0395	277.4779	3.7463	15.1360	14.5606
0.4547	1.1673	349.8936	3.3362	14.2835	12.2362
0.4291	1.3108	441.2084	2.9710	13.4790	10.2829
0.4049	1.4720	556.3543	2.6457	12.7198	8.6414
0.3821	1.6529	701.5508	2.3561	12.0034	7.2620
0.3606	1.8561	884.6405	2.0981	11.3273	6.1027
0.3403	2.0843	1115.5127	1.8685	10.6893	5.1285
0.3211	2.3405	1406.6375	1.6639	10.0873	4.3099
0.2859	2.9513	2236.6476	1.3195	8.9830	3.0437
0.2546	3.7216	3556.4192	1.0464	7.9996	2.1495
0.2268	4.6928	5654.9442	0.8299	7.1238	1.5180
0.2019	5.9175	8991.7393	0.6581	6.3439	1.0721
0.1798	7.4619	14297.4664	0.5219	5.6494	0.7571
0.1601	9.4093	22733.9272	0.4139	5.0310	0.5347
0.1426	11.8649	36148.4636	0.3282	4.4802	0.3776
0.1270	14.9614	57478.4731	0.2603	3.9897	0.2667
0.1131	18.8660	91394.6137	0.2064	3.5529	0.1883
0.1007	23.7896	145323.5441	0.1637	3.1640	0.1330
0.0897	29.9982	231074.1477	0.1298	2.8176	0.0939
0.0799	37.8270	367423.3384	0.1030	2.5092	0.0663
0.0711	47.6991	584227.6645	0.0816	2.2345	0.0468
0.0633	60.1475	928961.0330	0.0647	1.9898	0.0331
0.0564	75.8447	1477110.1288	0.0513	1.7720	0.0234
0.0502	95.6386	2348703.8263	0.0407	1.5780	0.0165
0.0447	120.5982	3734596.0575	0.0323	1.4053	0.0117
0.0398	152.0717	5938257.3301	0.0256	1.2514	0.0082
0.0355	191.7592	9442226.0334	0.0203	1.1144	0.0058
0.0316	241.8042	15013770.4565	0.0161	0.9924	0.0041
0.0281	304.9099	23872898.4588	0.0128	0.8838	0.0029
0.0251	384.4848	37959504.0750	0.0101	0.7870	0.0020

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