

## 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/in<sup>2</sup>

**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	30%	Balance								

### Technical Data

<b>Resistivity (Ω/cm)</b>	114.5	<b>Resistivity (Ω/sqmf)</b>	89
<b>Resistivity (μΩ/cm)</b>	19.04	<b>Nom. Temp. Coeff. of Resistance (TCR)</b>	
<b>Std. Res. Tol. &lt;.020"</b>		<b>Std. Res. Tol. &gt;.020"</b>	
<b>Thermal EMF vs. Cu</b>	-5.39	<b>Specific Heat (20°C)</b>	
<b>Density (g/cm<sup>3</sup>)</b>	18.75	<b>Density (lb/in<sup>3</sup>)</b>	0.677
<b>Thermal Conductivity</b>		<b>Coeff. of Linear Expansion (X 10<sup>-6</sup>)</b>	
<b>Approx. Melting Point</b>	2315°C	<b>Max. Continuous Operating Temp.</b>	1700°C
<b>UTS – Hard (KPSI)</b>		<b>YTS Tensile – Hard (KPSI)</b>	
<b>UTS – Stress Relieved (KPSI)</b>		<b>YTS Tensile – Stress Relieved (KPSI)</b>	
<b>UTS – Annealed (KPSI)</b>		<b>YTS Tensile – Annealed (KPSI)</b>	
<b>Magnetic Attraction</b>	None	<b>Emissivity – fully oxidized</b>	
<b>Designations/Specifications</b>	ANSI/MC96.1 TypeB	<b>Forms Available</b>	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 <sup>2</sup> /m	cm <sup>2</sup> /Ω at 20°C
10.4049	0.0022	0.0014	1594.0415	326.8804	146018.8301
9.2658	0.0028	0.0022	1264.1306	291.0952	103121.0509
8.2515	0.0036	0.0036	1002.4997	259.2276	72825.8892
7.3481	0.0045	0.0056	795.0173	230.8486	51430.9163
6.5437	0.0057	0.0090	630.4764	205.5765	36321.4123
5.8273	0.0071	0.0143	499.9898	183.0710	25650.8164
5.1894	0.0090	0.0227	396.5094	163.0293	18115.0551
4.6213	0.0113	0.0361	314.4458	145.1817	12793.1686
4.1154	0.0143	0.0574	249.3665	129.2880	9034.7594
3.6648	0.0180	0.0912	197.7563	115.1342	6380.5050
3.2636	0.0228	0.1451	156.8277	102.5299	4506.0242
2.9063	0.0287	0.2307	124.3698	91.3054	3182.2331
2.5882	0.0362	0.3668	98.6296	81.3098	2247.3486
2.3048	0.0456	0.5833	78.2167	72.4084	1587.1169
2.0525	0.0575	0.9275	62.0286	64.4815	1120.8497
1.8278	0.0725	1.4747	49.1908	57.4224	791.5637
1.7249	0.0815	1.8596	43.8057	54.1881	665.2044
1.6277	0.0915	2.3449	39.0101	51.1361	559.0161
1.5360	0.1027	2.9569	34.7394	48.2559	469.7789
1.4495	0.1153	3.7286	30.9363	45.5380	394.7869
1.3679	0.1295	4.7016	27.5496	42.9731	331.7661
1.2908	0.1455	5.9287	24.5336	40.5527	278.8054
1.2181	0.1633	7.4759	21.8478	38.2686	234.2990
1.1495	0.1834	9.4270	19.4560	36.1132	196.8973
1.0848	0.2060	11.8872	17.3261	34.0792	165.4661
1.0237	0.2313	14.9895	15.4293	32.1597	139.0523
0.9660	0.2597	18.9015	13.7402	30.3483	116.8550
0.9116	0.2916	23.8344	12.2360	28.6390	98.2012
0.8603	0.3275	30.0546	10.8964	27.0260	82.5251

Diameter mm	Resistance at 20° C Ω/m	Resistance at 20° C Ω/kg	Weight kg/1000 m	Surface area cm <sup>2</sup> /m	cm <sup>2</sup> /Ω at 20°C
0.8118	0.3677	37.8982	9.7035	25.5038	69.3514
0.7661	0.4130	47.7888	8.6413	24.0673	58.2806
0.7229	0.4637	60.2607	7.6953	22.7117	48.9772
0.6822	0.5207	75.9874	6.8528	21.4325	41.1588
0.6438	0.5847	95.8185	6.1026	20.2254	34.5885
0.6075	0.6566	120.8251	5.4345	19.0862	29.0671
0.5733	0.7373	152.3579	4.8396	18.0112	24.4270
0.5410	0.8280	192.1200	4.3098	16.9967	20.5277
0.5106	0.9298	242.2592	3.8380	16.0394	17.2508
0.4818	1.0441	305.4836	3.4178	15.1360	14.4970
0.4547	1.1724	385.2083	3.0436	14.2835	12.1828
0.4291	1.3166	485.7394	2.7104	13.4790	10.2380
0.4049	1.4784	612.5069	2.4137	12.7198	8.6037
0.3821	1.6602	772.3580	2.1495	12.0034	7.2303
0.3606	1.8642	973.9269	1.9142	11.3273	6.0761
0.3403	2.0934	1228.1009	1.7046	10.6893	5.1062
0.3211	2.3508	1548.6089	1.5180	10.0873	4.2910
0.2859	2.9643	2462.3916	1.2038	8.9830	3.0304
0.2546	3.7379	3915.3672	0.9547	7.9996	2.1401
0.2268	4.7134	6225.6955	0.7571	7.1238	1.5114
0.2019	5.9435	9899.2719	0.6004	6.3439	1.0674
0.1798	7.4946	15740.5040	0.4761	5.6494	0.7538
0.1601	9.4505	25028.4533	0.3776	5.0310	0.5323
0.1426	11.9169	39796.9135	0.2994	4.4802	0.3760
0.1270	15.0270	63279.7523	0.2375	3.9897	0.2655
0.1131	18.9487	100619.0354	0.1883	3.5529	0.1875
0.1007	23.8939	159990.9911	0.1493	3.1640	0.1324
0.0897	30.1297	254396.3687	0.1184	2.8176	0.0935
0.0799	37.9929	404507.2286	0.0939	2.5092	0.0660
0.0711	47.9083	643193.5283	0.0745	2.2345	0.0466
0.0633	60.4113	1022720.6973	0.0591	1.9898	0.0329
0.0564	76.1774	1626194.2615	0.0468	1.7720	0.0233
0.0502	96.0580	2585757.5611	0.0371	1.5780	0.0164
0.0447	121.1271	4111527.3391	0.0295	1.4053	0.0116
0.0398	152.7387	6537603.2598	0.0234	1.2514	0.0082
0.0355	192.6002	10395226.1184	0.0185	1.1144	0.0058
0.0316	242.8647	16529104.2847	0.0147	0.9924	0.0041
0.0281	306.2472	26282380.5218	0.0117	0.8838	0.0029
0.0251	386.1712	41790741.5909	0.0092	0.7870	0.0020

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