HYNDMAN

Alloy Datasheet –
HYNDMAN.PTRH13.DATASHEET.ENG

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Special Alloy Wire for High Temp Heating or Thermocouple Applications - PTRH13

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

I = Current
C_t = Temperature factor
p = Surface load W/in^2

Common Names: Platinum Rhodium; Platinum-13% 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	13%	Balance

Technical Data

Resistivity (Ω/cmf)	117.7	**Resistivity (Ω/sqmf)**	92
Resistivity (μΩ/cm)	19.568	**Nom. Temp. Coeff. of Resistance (TCR)**	
Std. Res. Tol. <.020"		**Std. Res. Tol. >.020"**	
Thermal EMF vs. Cu	-1.075	**Specific Heat (20°C)**	
Density (g/cm³)	20.28	**Density (lb/in³)**	0.733
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 TypeR	**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	1158.6631	15.4432	22017.6242
00	0.3648	0.0009	0.0010	918.8603	13.7525	15549.2312
0	0.3249	0.0011	0.0015	728.6883	12.2470	10981.1389
1	0.2893	0.0014	0.0024	577.8753	10.9062	7755.0723
2	0.2576	0.0018	0.0039	458.2753	9.7123	5476.7677
3	0.2294	0.0022	0.0062	363.4283	8.6490	3867.7891
4	0.2043	0.0028	0.0098	288.2113	7.7022	2731.5003
5	0.1819	0.0036	0.0156	228.5616	6.8590	1929.0333
6	0.1620	0.0045	0.0247	181.2574	6.1081	1362.3170
7	0.1443	0.0057	0.0393	143.7434	5.4394	962.0921
8	0.1285	0.0071	0.0625	113.9936	4.8439	679.4463
9	0.1144	0.0090	0.0994	90.4009	4.3136	479.8368
10	0.1019	0.0113	0.1581	71.6910	3.8414	338.8692
11	0.0907	0.0143	0.2514	56.8535	3.4209	239.3153
12	0.0808	0.0180	0.3998	45.0868	3.0464	169.0087
13	0.0720	0.0227	0.6357	35.7554	2.7129	119.3569
13.5	0.0679	0.0255	0.8016	31.8411	2.5601	100.3036
14	0.0641	0.0287	1.0108	28.3553	2.4159	84.2919
14.5	0.0605	0.0322	1.2746	25.2511	2.2798	70.8362
15	0.0571	0.0361	1.6072	22.4867	2.1514	59.5284
15.5	0.0539	0.0406	2.0266	20.0250	2.0302	50.0257
16	0.0508	0.0456	2.5556	17.8328	1.9159	42.0400
16.5	0.0480	0.0512	3.2225	15.8805	1.8080	35.3291
17	0.0453	0.0575	4.0635	14.1420	1.7061	29.6894
17.5	0.0427	0.0645	5.1240	12.5938	1.6100	24.9500
18	0.0403	0.0725	6.4612	11.2151	1.5194	20.9672
18.5	0.0380	0.0814	8.1475	9.9873	1.4338	17.6201
19	0.0359	0.0914	10.2738	8.8940	1.3530	14.8074
19.5	0.0339	0.1026	12.9551	7.9203	1.2768	12.4436
20	0.0320	0.1152	16.3361	7.0532	1.2049	10.4572
20.5	0.0302	0.1294	20.5994	6.2811	1.1370	8.7879

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
21	0.0285	0.1453	25.9754	5.5935	1.0730	7.3851
21.5	0.0269	0.1632	32.7544	4.9811	1.0126	6.2062
22	0.0253	0.1832	41.3026	4.4358	0.9555	5.2155
22.5	0.0239	0.2057	52.0817	3.9502	0.9017	4.3829
23	0.0226	0.2310	65.6740	3.5177	0.8509	3.6833
23.5	0.0213	0.2594	82.8135	3.1326	0.8030	3.0953
24	0.0201	0.2913	104.4260	2.7897	0.7578	2.6012
24.5	0.0190	0.3271	131.6789	2.4843	0.7151	2.1859
25	0.0179	0.3673	166.0443	2.2123	0.6748	1.8370
25.5	0.0169	0.4125	209.3783	1.9701	0.6368	1.5438
26	0.0159	0.4632	264.0215	1.7545	0.6009	1.2973
26.5	0.0150	0.5202	332.9255	1.5624	0.5671	1.0902
27	0.0142	0.5841	419.8119	1.3913	0.5351	0.9162
27.5	0.0134	0.6559	529.3738	1.2390	0.5050	0.7699
28	0.0126	0.7365	667.5290	1.1034	0.4766	0.6470
29	0.0113	0.9288	1061.4157	0.8750	0.4244	0.4569
30	0.0100	1.1711	1687.7219	0.6939	0.3779	0.3227
31	0.0089	1.4768	2683.5906	0.5503	0.3366	0.2279
32	0.0080	1.8622	4267.0884	0.4364	0.2997	0.1609
33	0.0071	2.3482	6784.9557	0.3461	0.2669	0.1137
34	0.0063	2.9610	10788.5331	0.2745	0.2377	0.0803
35	0.0056	3.7338	17154.4887	0.2177	0.2117	0.0567
36	0.0050	4.7082	27276.7835	0.1726	0.1885	0.0400
37	0.0045	5.9370	43371.9088	0.1369	0.1679	0.0283
38	0.0040	7.4864	68964.2336	0.1086	0.1495	0.0200
39	0.0035	9.4402	109657.7407	0.0861	0.1331	0.0141
40	0.0031	11.9039	174363.1365	0.0683	0.1185	0.0100
41	0.0028	15.0105	277249.0405	0.0541	0.1056	0.0070
42	0.0025	18.9280	440844.5041	0.0429	0.0940	0.0050
43	0.0022	23.8678	700972.2250	0.0340	0.0837	0.0035
44	0.0020	30.0968	1114592.6866	0.0270	0.0746	0.0025
45	0.0018	37.9514	1772276.8646	0.0214	0.0664	0.0017
46	0.0016	47.8558	2818038.6634	0.0170	0.0591	0.0012
47	0.0014	60.3452	4480869.8162	0.0135	0.0526	0.0009
48	0.0012	76.0940	7124882.4830	0.0107	0.0469	0.0006
49	0.0011	95.9529	11329039.3336	0.0085	0.0418	0.0004
50	0.0010	120.9945	18013929.7074	0.0067	0.0372	0.0003