

# HM Wire International, Inc.

Ph: 330-244-8501 Fax: 330-244-8561

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## Alloy 675 - Resistance Heating

### Chemical Composition

Nominal Composition	Cr%	Mn%	C%	Fe%	Ni%
	14-18	1	0.02	Balance	57

### Mechanical Properties

Melting Point	1,390°C (2,535°F)
Max Operating Temp	1,150°C (2,100°F)
Soft Tensile	95 - 125,000 PSI
Elongation	20 - 40%
Yield Point	40 - 60,000 PSI

### Physical Properties

Ω/cir.mil.ft:	675
Conductivity:	13 w / m K
Coefficient of Linear Expansion , 10 <sup>-6</sup> :	14.0 (200°C), 15.0 (500°C), 15.5 (600°C)
Temp. coefficient of Resistance:	0.000014
Weight/Density:	0.299 lbs/cu.in. (8.2 g/cm <sup>3</sup> )
Specific Heat:	0.110 cal./gm @ 20°C
Specific Gravity:	8.25

\*To be used as a guideline only.

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## Resistance Chart

Diameter			Resistance @ 68°F/20°C Ω/ft	Sq. in/Ω	Weight	Ω/lb.	Ft/Lb	Cross Sectional area (in <sup>2</sup> )
AWG	Inches	Mm		68°F	lb/1000 ft			
20	0.032	0.812	0.659	1.829	2.87	229.3	347.8	0.000804
21	0.0285	0.723	0.831	1.292	2.28	364.3	438.4	0.000638
22	0.0253	0.644	1.055	0.904	1.80	587.1	556.5	0.000507
23	0.0226	0.573	1.322	0.645	1.43	921.9	697.4	0.000401
24	0.0201	0.51	1.671	0.454	1.12	1,473	881.8	0.000314
25	0.0179	0.455	2.107	0.320	0.907	2,341	1,111	0.000254
26	0.0159	0.405	2.670	0.225	0.708	3,773	1,413	0.000199
27	0.0142	0.361	3.348	0.160	0.564	5,913	1,766	0.000158
28	0.0126	0.321	4.251	0.112	0.445	9,535	2,243	0.000125
29	0.0113	0.286	5.286	0.081	0.357	17,740	2,789	0.000100
30	0.01	0.255	6.750	0.056	0.280	24,040	3,561	0.0000785
31	0.0089	0.227	8.523	0.039	0.223	38,320	4,496	0.0000626
32	0.008	0.202	10.55	0.029	0.177	58,710	5,565	0.0000496
33	0.0071	0.18	13.39	0.020	0.141	94,560	7,062	0.0000394
34	0.0063	0.16	17.00	0.014	0.111	152,600	8,977	0.0000312
35	0.0056	0.143	21.52	0.010	0.0881	244,500	11,360	0.0000247
36	0.005	0.127	27.00	0.0070	0.0700	384,800	14,250	0.0000196
37	0.0045	0.113	33.33	0.0051	0.0542	586,300	17,590	0.0000152
38	0.004	0.101	42.19	0.0036	0.0447	939,100	22,260	0.0000126
39	0.0035	0.09	55.10	0.0024	0.0348	1,602,000	29,070	0.00000979
40	0.0031	0.08	70.24	0.0017	0.0278	2,603,000	37,060	0.00000779
41	0.0028	0.07	89.29	0.0012	0.0220	4,204,000	47,080	0.00000616
42	0.0025	0.063	108.00	0.00087	0.0173	6,154,000	56,980	0.00000487

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