



Technical

Resistance wire – Current vs. Temperature

Current Carrying Capacity of Straight Nickel Chromium Wire

Approximate amperes to heat straight, oxidized wire in quiet air to given temperature

Degrees F		400	600	800	1000	1200	1400
Degrees C		205	315	427	538	649	760
A.W.G or B. & S.	Inches Diameter	Amperes					
15	.057	7.2	10.0	12.8	16.1	20.0	24.5
16	.051	6.4	8.7	10.9	13.7	17.0	20.9
17	.045	5.5	7.5	9.5	11.7	14.5	17.6
18	.040	4.8	6.5	8.2	10.1	12.2	14.8
19	.036	4.3	5.8	7.2	8.7	10.6	12.7
20	.032	3.8	5.1	6.3	7.6	9.1	11.0
21	.0285	3.3	4.3	5.3	6.5	7.8	9.4
22	.0253	2.9	3.7	4.5	5.6	6.8	8.2
23	.0226	2.58	3.3	4.0	4.9	5.9	7.0
24	.0201	2.21	2.9	3.4	4.2	5.1	6.0
25	.0179	1.92	2.52	3.0	3.6	4.3	5.2
26	.0159	1.67	2.14	2.60	3.2	3.8	4.5
27	.0142	1.44	1.84	2.25	2.73	3.3	3.9
28	.0126	1.24	1.61	1.95	2.38	2.85	3.4
29	.0113	1.08	1.41	1.73	2.10	2.51	2.95
30	.0100	.92	1.19	1.47	1.78	2.14	2.52
31	.0089	.77	1.03	1.28	1.54	1.84	2.17
32	.0080	.68	.90	1.13	1.36	1.62	1.89
33	.0071	.59	.79	.97	1.17	1.40	1.62
34	.0063	.50	.68	.83	1.00	1.20	1.41
35	.0056	.43	.57	.72	.87	1.03	1.21
36	.0050	.38	.52	.63	.77	.89	1.04
37	.0045	.35	.46	.57	.68	.78	.90
38	.0040	.30	.41	.50	.59	.68	.78
39	.0035	.27	.36	.42	.49	.58	.66
40	.0031	.24	.31	.36	.43	.50	.57

Current Carrying Capacity of Ribbon Nickel Chromium Wire

At 1200° F approximate

Thickness Inches	Width-Inches					
	1/64	1/32	1/16	3/32	1/8	3/16
	Amps					
.0063	1.56	2.89	5.5	8.2	10.1	16.6
.0056	1.45	2.69	5.2	7.2	9.5	15.6
.0050	1.35	2.52	4.9	6.8	9.0	14.7
.0045	1.26	2.38	4.6	6.4	8.5	14.0
.0040	1.18	2.23	4.1	6.0	8.0	13.1
.0035	1.09	2.07	3.8	5.6	7.5	12.3
.0031	1.01	1.94	3.6	5.3	7.0	11.5
.0020	-	-	-	-	-	-
.0015	4	-	-	-	-	-

The current values in these are based on actual sheets of single strands of oxidized wire mounted in quiet air and operated at 1200° F. The tables are calculated for wire having a resistivity at 1200° F and a total surface watts-density of 28 watts per square inch.