

Suggested Ampacities

Assigning a current rating to a wire is really a problem of wire transfer. The watts generated at the conductor must be dissipated through the insulation to the ambient without overheating the conductor or insulation.

While current ratings for power cables have been officially assigned by such groups as the Insulated Cable Engineers Association and the National Electric Code, no such ratings have been officially developed for appliance wires or apparatus cables.

Since appliance and apparatus designs vary widely, any effort to standardize actual current ratings is just about impossible.

SUGGESTED AMPACITIES (All Types of Single Conductor Insulation)							
AWG	80C	90C	105C	125C	150C	200C	250C*
AMPERES PER CONDUCTOR							
30	2	3	3	3	3	4	4
28	3	4	4	5	5	6	6
26	4	5	5	6	6	7	8
24	6	7	7	8	8	10	11
22	8	9	10	11	12	13	14
20	10	12	13	14	15	17	19
18	15	16	18	20	22	24	29
16	18	20	24	26	29	32	37
14	20	25	33	40	40	45	39
12	25	30	45	50	50	55	54
10	35	40	58	70	70	75	73

CORRECTION FACTORS FOR VARIOUS AIR TEMPERATURES							
30	1.00	1.00	1.00	1.00	1.00	1.00	1.00
40	.88	.90	.92	.95	.96	.97	.98
50	.75	.80	.82	.89	.91	.93	.95
60	.58	.67	.73	.83	.87	.91	.95
70	.35	.52	.61	.76	.82	.87	.93
80	-	.30	.46	.69	.76	.84	.90
90	-	-	.30	.61	.71	.80	.87
100	-	-	-	.51	.65	.77	.85
125	-	-	-	-	.50	.66	.72
150	-	-	-	-	-	.54	.65
200	-	-	-	-	-	-	.49

Current ratings for different conductor materials may be calculated by multiplying the appropriate copper conductor ratings by the following factors:

*NICKEL PLATED COPPER: 0.87

NICKEL: 0.43

SUGGESTED CURRENT CARRYING CAPACITY TABLE (Base Temperature at 40C)

	150C Tinned Copper	200C Tinned Copper NPC 2% - 10%	250C NPC 2% - 10%	250C "A" Nickel	250C NPI	450C NPC - 27%	450C "A" Nickel
24	6.6	7.2	8	4	3.3	9	4.3
22	9	9.6	10.8	5	4.4	12	5.6
20	13	14	15	7	6	18	8
18	17	18	20	9.4	8	23	11
16	22	24	26	12	11	30	14
14	34	36	39	18	16	45	21
12	43	45	54	25	22	56	26
10	55	60	73	34	30	75	35
8	76	83	93	43	39	104	49
6	96	110	117	55	49	138	65
4	120	125	148	69	62	162	76
3	143	152	166	78	69	182	85
2	160	171	191	90	80	210	99
1	186	197	215	101	90	236	110
1/0	215	229	244	114	102	268	126
2/0	251	260	273	128	114	300	141
3/0	288	297	308	144	129	338	159
4/0	332	346	361	169	151	397	186
250	365	385	398	187	167	-	-
300	414	436	452	212	190	-	-
350	461	486	503	236	211	-	-
400	495	522	540	254	226	-	-
500	563	593	613	288	257	-	-

NOTE: For allowable ampacities for fixture wire, please see the National Electrical Code Handbook.

For ambient temperatures other than 40C (104F), multiply the ampacities shown above by the appropriate factor shown below.

WIRE TEMPERATURE RATING				
Ambient Temperature (C)	200C	250C	450C	Ambient Temperature (F)
41-50	0.97	0.98	0.99	106-122
51-60	0.94	0.95	0.99	124-140
61-70	0.90	0.93	0.96	142-158
71-80	0.87	0.90	0.95	160-176
81-90	0.83	0.87	0.93	177-194
91-100	0.72	0.85	0.92	195-212
101-120	0.71	0.79	0.89	213-248
121-140	0.61	0.71	0.86	249-284
141-160	0.50	0.65	0.84	285-320
161-180	0.35	0.58	0.81	321-356
181-200	-	0.49	0.78	357-392
201-225	-	0.35	0.74	393-437
226-250	-	-	0.69	439-482
251-275	-	-	0.65	483-527
176-300	-	-	0.60	528-572
301-325	-	-	0.55	573-617
326-350	-	-	0.49	618-662
351-375	-	-	0.42	663-707
376-400	-	-	0.34	708-752

NOTE: The use of this table for establishing ampacity ratings is an inexact procedure. This table should only be used as a starting point when establishing ratings for any given situations. It is recommended that design engineers desiring accurate ampacity data study the National Electrical Code Handbook - Article 310-13-310-84.

SUGGESTED AMPACITIES (All Types of Insulations)														
COPPER								ALUMINUM						
Not More Than 3 Conductors in Raceway or Cable			Single Conductor in Free Air					Not More Than 3 Conductors in Raceway or Cable			Single Conductor in Free Air			
AWG or MCM	CONDUCTOR TEMPERATURE RATING							CONDUCTOR TEMPERATURE RATINGS						
	85-90C Temp (185F)	110C Temp (230F)		85-90C Temp (185F)	110C Temp (230F)	125C Temp (257F)	200C Temp (392F)	85-90C Temp (185F)	110C Temp (230F)	85-90C Temp (185F)		110C Temp (230F)	125C Temp (257F)	200C Temp (392F)
	AMPERES PER CONDUCTOR (100% Load Factor)							AMPERES PER CONDUCTOR (100% Load Factor)						
14	25	30		30	40	40	45	-	-	-		-	-	-
12	30	35		40	50	50	55	25	25	30		40	40	45
10	40	45		55	65	70	75	30	35	45		50	55	60
8	55	60		75	85	90	100	40	45	55		65	70	80
6	70	80		100	120	125	135	55	60	80		95	100	105
4	95	105		135	160	170	180	75	80	105		125	135	140
2	125	135		185	210	225	240	100	105	140		165	175	185
1	145	160		215	245	265	280	110	125	165		190	205	220
0	165	190		250	285	305	325	130	150	190		220	240	255
00	190	215		290	330	355	370	145	170	220		255	275	290
000	215	245		335	385	410	430	170	195	255		300	320	335
0000	250	275		390	445	475	510	195	215	300		345	370	400
250	275	315		440	495	530	-	220	250	330		385	415	-
300	310	345		485	555	590	-	250	275	375		435	460	-
350	340	390		550	610	655	-	270	310	415		475	510	-
400	365	420		595	665	710	-	295	335	450		520	555	-
500	415	470		675	765	815	-	335	380	515		595	635	-
600	460	525		750	855	910	-	370	425	585		675	720	-
700	500	560		825	940	1005	-	405	455	645		745	795	-
750	515	580		855	980	1045	-	420	470	670		775	825	-
800	535	600		885	1020	1085	-	430	485	695		805	855	-
900	565	-		950	-	-	-	465	-	750		-	-	-
1000	590	680		1020	1165	1240	-	485	560	800		930	990	-

CORRECTION FACTORS FOR VARIOUS AMBIENT AIR TEMPERATURES														
40C	0.90	0.94		0.90	0.94	0.95	-	0.90	0.94	0.90		0.94	0.95	-
50C	0.80	0.87		0.80	0.87	0.89	-	0.80	0.87	0.80		0.87	0.89	-
60C	0.67	0.79		0.67	0.79	0.83	0.91	0.67	0.79	0.67		0.79	0.83	0.91
70C	0.52	0.71		0.52	0.71	0.76	0.87	0.52	0.71	0.52		0.71	0.76	0.87
80C	0.30	0.61		0.30	0.61	0.69	0.84	0.30	0.61	0.30		0.61	0.69	0.84
90C	-	0.50		-	0.50	0.61	0.80	-	0.50	-		0.50	0.61	0.80
100C	-	-		-	-	0.51	0.77	-	-	-		-	0.51	0.77
120C	-	-		-	-	-	0.69	-	-	-		-	-	0.69
140C	-	-		-	-	-	-	0.59	-	-		-	-	0.59

*Based on an ambient temperature of 30C (86F)