

Section 5

AMPACITIES AND CORRECTION FACTORS

5.1 INTRODUCTION

Establishing ampacity ratings is an inexact procedure. For any given situation, these tables should only be used as a starting point when establishing ratings. Values may be greater than or less than those given in the tables because of the influence of installation method, environment, number of conductors, conductor composition and size, ambient temperatures, insulation types, etc. It is recommended that design engineers desiring accurate ampacity data closely study the 1999 National Electrical Code, Articles 310-15 through 310-84. Additional information can be derived from AIEE, Paper Number 57-660: "The Calculation of the Temperature Rise and Load Capability of Cable Systems" by J.H. Neher and M. H. McGrath. This paper was presented to the AIEE general meeting in Montreal, Quebec, Canada on June 24-28, 1957, and was published in the "AIEE Transactions," Part 3 (power apparatus and systems), Volume 76, October 1957, pp. 752-772. That information is still applicable.

The following tables are to be used in series to determine a wire's ampacity in a given application. Section 6 should be used as a reference for examples of applications of these tables.

5.2 BASE AMPACITIES

Table 5-1

**ALLOWABLE AMPACITIES OF INSULATED CONDUCTORS RATED - THROUGH 2000 VOLTS,
60°C TO 90°C (140°F TO 194°F) NOT MORE THAN THREE CURRENT-CARRYING CONDUCTORS
IN RACEWAY OR CABLE OR EARTH (DIRECTLY BURIED),
BASED ON AMBIENT TEMPERATURES OF 40°C (104°F)**

AWG	105 °C BC, TCC	200 °C BC, TCC, SCC, or NCC 2%-10%	250 °C NCC 2%-10%	250 °C "A" Nickel	450 °C NCC-Class 27	450 °C "A" Nickel
24	6.6	7.2	8	4	9	4.3
22	9	9.6	10.8	5	12	5.6
20	13	14	15	7	18	8
18	17	18	20	9.4	23	11
16	22	24	26	12	30	14
14	34	36	39	18	45	21
12	43	45	54	25	56	26
10	55	60	73	34	75	35
8	76	83	93	43	104	49
6	96	110	117	55	138	65
4	120	125	148	69	162	76
3	143	152	166	78	182	85
2	160	171	191	90	210	99
1	186	197	215	101	236	110
1/0	215	229	244	114	268	126
2/0	251	260	273	128	300	141
3/0	288	297	308	166	338	159
4/0	332	346	361	169	397	186
250	365	385	398	187	-	-
300	414	436	452	212	-	-
350	461	486	503	236	-	-
400	495	522	540	254	-	-
500	563	593	613	288	-	-

5.3 TEMPERATURE CURRECTION FACTORS

Table 5-3

**CORRECTION FACTORS FOR AMBIENT TEMPERATURES OTHER THAN 40°C (104°F),
MULTIPLY THE AMPACITIES SHOWN IN TABLES 5-1 AND 5-2
BY THE APPROPRIATE FACTOR SHOWN BELOW**

Ambient Temp °C	105 °C	200 °C	250 °C	450 °C	Ambient Temp °F
41-50	0.95	0.97	0.98	0.99	106-122
51-60	0.90	0.94	0.95	0.99	124-140
61-70	0.85	0.90	0.93	0.96	142-158
71-80	0.80	0.87	0.90	0.95	160-176
81-90	0.74	0.83	0.87	0.93	177-194
91-100	0.67	0.79	0.85	0.92	195-212
101-120	0.52	0.71	0.79	0.89	213-248
121-140	0.30	0.61	0.72	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	393-473
226-250	...	...	...	0.69	439-482
251-275	...	...	...	0.65	483-527
276-300	...	...	...	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
401-450	...	...	...	...	753-842

Table 5-4

**ADJUSTMENT FACTORS FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A
RACEWAY OR CABLE
(NEC Table 310-15 (b)(2)(a))**

Number of Current-Carrying Conductors	Percent of Values in Tables 5-1 through 5-3 as Adjusted for Ambient Temperature if necessary
4-6	80
7-9	70
10-20	50
21-30	45
31-40	40
41 and above	35