

NEC Ampacity Data

Table 310.15(B)(2)(b) Ambient Temperature Correction Factors Based on 40°C (104°F)

For ambient temperatures other than 40°C (104°F), multiply the allowable ampacities specified in the ampacity tables by the appropriate correction factor shown below.

Ambient Temperature (°C)	Temperature Rating of Conductor						Ambient Temperature (°F)
	60°C	75°C	90°C	150°C	200°C	250°C	
10 or less	1.58	1.36	1.26	1.13	1.09	1.07	50 or less
11-15	1.50	1.31	1.22	1.11	1.08	1.06	51-59
16-20	1.41	1.25	1.18	1.09	1.06	1.05	60-68
21-25	1.32	1.20	1.14	1.07	1.05	1.04	69-77
26-30	1.22	1.13	1.10	1.04	1.03	1.02	78-86
31-35	1.12	1.07	1.05	1.02	1.02	1.01	87-95
36-40	1.00	1.00	1.00	1.00	1.00	1.00	96-104
41-45	0.87	0.93	0.95	0.98	0.98	0.99	105-113
46-50	0.71	0.85	0.89	0.95	0.97	0.98	114-122
51-55	0.50	0.76	0.84	0.93	0.95	0.96	123-131
56-60	-	0.65	0.77	0.90	0.94	0.95	132-140
61-65	-	0.53	0.71	0.88	0.92	0.94	141-149
66-70	-	0.38	0.63	0.85	0.90	0.93	150-158
71-75	-	-	0.55	0.83	0.88	0.91	159-167
76-80	-	-	0.45	0.80	0.87	0.90	168-176
81-90	-	-	-	0.74	0.83	0.87	177-194
91-100	-	-	-	0.67	0.79	0.85	195-212
101-110	-	-	-	0.60	0.75	0.82	213-230
111-120	-	-	-	0.52	0.71	0.79	231-248
121-130	-	-	-	0.43	0.66	0.76	249-266
131-140	-	-	-	0.30	0.61	0.72	267-284
141-160	-	-	-	-	0.50	0.65	285-320
161-180	-	-	-	-	0.35	0.58	321-356
181-200	-	-	-	-	-	0.49	357-392
201-225	-	-	-	-	-	0.35	393-437

Table 310.15(B)(3)(a) Adjustment Factors for More Than Three Current-Carrying Conductors in a Raceway or Cable

Number of Conductors	Percent of Values in Table 310.15(B)(16) through Table 310.15(B)(19) 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

* Number of conductors is the total number of conductors in the raceway or cable adjusted in accordance with 310.15(B)(5) and (6).

Informational Note No. 2: See 366.23(A) for adjustment factors for conductors in sheet

metal auxiliary gutters and 376.22(B) for adjustment factors for conductors in metal wireways.

- (1) Where conductors are installed in cable trays, the provisions of 392.80 shall apply.
- (2) Adjustment factors shall not apply to conductors in raceways having a length not exceeding 600 mm (24 in.).
- (3) Adjustment factors shall not apply to underground conductors entering or leaving an outdoor trench if those conductors have physical protection in the form of rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride conduit (PVC), or reinforced thermosetting resin conduit (RTRC) having a length not exceeding 3.05 m (10 ft), and if the number of conductors does not exceed four.
- (4) Adjustment factors shall not apply to Type AC cable or to Type MC cable under the following conditions:

- a. The cables do not have an overall outer jacket.
- b. Each cable has not more than three current-carrying conductors.
- c. The conductors are 12 AWG copper.
- d. Not more than 20 current-carrying conductors are installed without maintaining spacing, are stacked, or are supported on "bridle rings."

(5) An adjustment factor of 60 percent shall be applied to Type AC cable or Type MC cable under the following conditions:

- a. The cables do not have an overall outer jacket.
- b. The number of current carrying conductors exceeds 20.
- c. The cables are stacked or bundled longer than 600 mm (24 in) without spacing being maintained.

(b) *More Than One Conduit, Tube, or Raceway.* Spacing between conduits, tubing, or raceways shall be maintained.

(c) *Circular Raceways Exposed to Sunlight on Rooftops.* Where conductors or cables are installed in circular raceways exposed to direct sunlight on or above rooftops, the adjustments shown in Table 310.15(B)(3)(c) shall be added to the outdoor temperature to determine the applicable ambient temperature for application of the correction factors in Table 31 0.15(B)(2)(a) or Table 31 0.15(B)(2)(b).

Informational Note: One source for the average ambient temperatures in various locations is the ASHRAE Handbook - Fundamentals.

Table 310.15(B)(3)(c) Ambient Temperature Adjustment for Circular Raceways Exposed to Sunlight on or Above Rooftops

Distance Above Roof to Bottom of Conduit	Temperature Adder °C	Temperature Adder °F
0-13 mm (½ in.)	33	60
Above 13 mm (½ in.) - 90 mm (3½ in.)	22	40
Above 90 mm (3½ in.) - 300 mm (12 in.)	17	30
Above 300 mm (12 in.) - 900 mm (36 in.)	14	25

Informational Note to Table 31 0.15(B)(3)(c): The temperature adders in Table 310.15(B)(3)(c) are based on the results of averaging the ambient temperatures.

(4) **Bare or Covered Conductors.** Where bare or covered conductors are installed with insulated conductors, the temperature rating of the bare or covered conductor shall be equal to the lowest temperature rating of the insulated conductors for the purpose of determining ampacity.

(5) **Neutral Conductor.**

(a) A neutral conductor that carries only the unbalanced current from other conductors of the same circuit shall not be required to be counted when applying the provisions of 310.15(B)(3)(a).

(b) In a 3-wire circuit consisting of two phase conductors and the neutral conductor of a 4-wire, 3-phase, wye-connected system, a common conductor carries approximately the same current as the line-to-neutral load currents of the other conductors and shall be counted when applying the provisions of 310.15(B)(3)(a).

(c) On a 4-wire, 3-phase wye circuit where the major portion of the load consists of nonlinear loads, harmonic currents are present in the neutral conductor; the neutral conductor shall therefore be considered a current-carrying conductor.

(6) **Grounding or Bonding Conductor.** A grounding or bonding conductor shall not be counted when applying the provisions of 31 0.15(B)(3)(a).

Table 310.15(B)(16) (formerly Table 310.16) Allowable Ampacities of Insulated Conductors Rated Up to and Including 2000 Volts, 60°C Through 90°C (140°F Through 194°F), Not More Than Three Current-Carrying Conductors in Raceway, Cable, or Earth (Directly Buried), Based on Ambient Temperature of 30°C (86°F)*

Temperature Rating of Conductor [See Table 310.104(A).]						
	60°C (140°F)	75°C (167°F)	90°C (194°F)	60°C (140°F)	75°C (167°F)	90°C (194°F)
	Types TW, UF	Types RHW, THHW, THW, THWN, XHHW, USE, ZW	Types TBS, SA, SIS, FEP, FEPP, MI, RHH, RHW-2, THHN, THHW, THW- 2, THWN-2, USE-2, XHH, XHHW, XHHW-2, ZW-2	Types TW, UF	Types RHW, THHW, THW, THWN, XHHW, USE	Types TBS, SA, SIS, THHN, THHW, THW-2, THWN-2, RHH, RHW-2, USE- 2, XHH, XHHW, XHHW-2, ZW-2

Size AWG or kcmil	Temperature Rating of Conductor [See Table 310.104(A).]						Size AWG or kcmil
	COPPER			ALUMINUM OR COPPER-CLAD ALUMINUM			
18	-	-	14	-	-	-	-
16	-	-	18	-	-	-	-
14**	15	20	25	-	-	-	-
12**	20	25	30	15	20	25	12**
10**	30	35	40	25	30	35	10**
8	40	50	55	35	40	45	8
6	55	65	75	40	50	55	6
4	70	85	95	55	65	75	4
3	85	100	115	65	75	85	3
2	95	115	130	75	90	100	2
1	110	130	145	85	100	115	1
1/0	125	150	170	100	120	135	1/0
2/0	145	175	195	115	135	150	2/0
3/0	165	200	225	130	155	175	3/0
4/0	195	230	260	150	180	205	4/0
250	215	255	290	170	205	230	250
300	240	285	320	195	230	260	300
350	260	310	350	210	250	280	350
400	280	335	380	225	270	305	400
500	320	380	430	260	310	350	500
600	350	420	475	285	340	385	600
700	385	460	520	315	375	425	700
750	400	475	535	320	385	435	750
800	410	490	555	330	395	445	800
900	435	520	585	355	425	480	900
1000	455	545	615	375	445	500	1000
1250	495	590	665	405	485	545	1250
1500	525	625	705	435	520	585	1500
1750	545	650	735	455	545	615	1750
2000	555	665	750	470	560	630	2000

*Refer to 310.15(B)(2) for the ampacity correction factors where the ambient temperature is other than 30°C (86°F).

**Refer to 240.4(D) for conductor overcurrent protection limitations.

Table 310.15(B)(17) (formerly Table 310.17) Allowable Ampacities of Single-Insulated Conductors Rated Up to and Including 2000 Volts in Free Air, Based on Ambient Temperature of 30°C (86°F)*

Size AWG or kcmil	Temperature Rating of Conductor [See Table 310.104(A).]						Size AWG or kcmil
	60°C (140°F)	75°C (167°F)	90°C (194°F)	60°C (140°F)	75°C (167°F)	90°C (194°F)	
	Types TW, UF	Types RHW, THHW, THW, THWN, XHHW, ZW	Types TBS, SA, SIS, FEP, FEPB, MI, RHH, RHW-2, THHN, THHW, THW-2, THWN-2, USE-2, XHH, XHHW, XHHW-2, ZW-2	Types TW, UF	Types RHW, THHW, THW, THWN, XHHW	Types TBS, SA, SIS, THHN, THHW, THW-2, THWN-2, RHH, RHW-2, USE-2, XHH, XHHW, XHHW-2, ZW-2	
Size AWG or kcmil	COPPER			ALUMINUM OR COPPER-CLAD ALUMINUM			Size AWG or kcmil
18	-	-	18	-	-	-	-
16	-	-	24	-	-	-	-
14**	25	30	35	-	-	-	-
12**	30	35	40	25	30	35	12**
10**	40	50	55	35	40	45	10**
8	60	70	80	45	55	60	8
6	80	95	105	60	75	85	6
4	105	125	140	80	100	115	4
3	120	145	165	95	115	130	3
2	140	170	190	110	135	150	2
1	165	195	220	130	155	175	1
1/0	195	230	260	150	180	205	1/0
2/0	225	265	300	175	210	235	2/0
3/0	260	310	350	200	240	270	3/0
4/0	300	360	405	235	280	315	4/0
250	340	405	455	265	315	355	250
300	375	445	500	290	350	395	300

Temperature Rating of Conductor [See Table 310.104(A).]							
350	420	505	570	330	395	445	350
400	455	545	615	355	425	480	400
500	515	620	700	405	485	545	500
600	575	690	780	455	545	615	600
700	630	755	850	500	595	670	700
750	655	785	885	515	620	700	750
800	680	815	920	535	645	725	800
900	730	870	980	580	700	790	900
1000	780	935	1055	625	750	845	1000
1250	890	1065	1200	710	855	965	1250
1500	980	1175	1325	795	950	1070	1500
1750	1070	1280	1445	875	1050	1185	1750
2000	1155	1385	1560	960	1150	1295	2000

*Refer to 310.15(B)(2) for the ampacity correction factors where the ambient temperature is other than 30°C (86°F).

**Refer to 240.4(D) for conductor overcurrent protection limitations.

Table 310.15(B)(20) (formerly Table 310.20) Ampacities of Not More Than Three Single Insulated Conductors, Rated Up to and Including 2000 Volts, Supported on a Messenger, Based on Ambient Air Temperature of 40°C (104°F)

Temperature Rating of Conductor [See Table 310.104(A).]							
75°C (167°F)		90°C (194°F)		75°C (167°F)		90°C (194°F)	
Types RHW, THHW, THW, THWN, XHHW, ZW		Types MI, THHN, THHW, THW-2, THWN-2, RHH, RHW-2, USE-2, XHHW, XHHW-2, ZW-2		Types RHW, THW, THWN, THHW, XHHW		Types THHN, THHW, RHH, XHHW-2, THW-2, THWN-2, USE-2, ZW-2	
Size AWG or kcmil	COPPER			ALUMINUM OR COPPER-CLAD ALUMINUM		Size AWG or kcmil	
8	57	66	44	51	8		
6	76	89	59	69	6		
4	101	117	78	91	4		
3	118	138	92	107	3		
2	135	158	106	123	2		
1	158	185	123	144	1		
1/0	183	214	143	167	1/0		
2/0	212	247	165	193	2/0		
3/0	245	287	192	224	3/0		
4/0	287	335	224	262	4/0		
250	320	374	251	292	250		
300	359	419	282	328	300		
350	397	464	312	364	350		
400	430	503	339	395	400		
500	496	580	392	458	500		
600	553	647	440	514	600		
700	610	714	488	570	700		
750	638	747	512	598	750		
800	660	773	532	622	800		
900	704	826	572	669	900		
1000	748	879	612	716	1000		

*Refer to 310.15(B)(2) for the ampacity correction factors where the ambient temperature is other than 40°C (104°F).

Table 310.15(B)(21) (formerly Table 310.21) Ampacities of Bare or Covered Conductors in Free Air, Based on 40°C (104°F) Ambient, 80°C (176°F) Total Conductor Temperature, 610 mm/sec (2 ft/sec) Wind Velocity

Copper Conductors		AAC Aluminum Conductors	
Bare	Covered	Bare	Covered

Copper Conductors				AAC Aluminum Conductors			
AWG or kcmil	Amperes	AWG or kcmil	Amperes	AWG or kcmil	Amperes	AWG or kcmil	Amperes
8	98	8	103	8	76	8	80
6	124	6	130	6	96	6	101
4	155	4	163	4	121	4	127
2	209	2	219	2	163	2	171
1/0	282	1/0	297	1/0	220	1/0	231
2/0	329	2/0	344	2/0	255	2/0	268
3/0	382	3/0	401	3/0	297	3/0	312
4/0	444	4/0	466	4/0	346	4/0	364
250	494	250	519	266.8	403	266.8	423
300	556	300	584	336.4	468	336.4	492
500	773	500	812	397.5	522	397.5	548
750	1000	750	1050	477	588	477	617
1000	1193	1000	1253	556.5	650	556.5	682
-	-	-	-	636	709	636	744
-	-	-	-	795	819	795	860
-	-	-	-	954	920	-	-
-	-	-	-	1033.5	968	1033.5	1017
-	-	-	-	1272	1103	1272	1201
-	-	-	-	1590	1267	1590	1381
-	-	-	-	2000	1454	2000	1527

Table 310.60(C)(4) Ambient Temperature Correction Factors

For ambient temperatures other than 40°C (104°F), multiply the allowable ampacities specified in the ampacity tables by the appropriate factor shown below.

Ambient Temperature (°C)	Temperature Rating of Conductor		Ambient Temperature (°F)
	90°C	105°C	
10 or less	1.26	1.21	50 or less
11-15	1.22	1.18	51-59
16-20	1.18	1.14	60-68
21-25	1.14	1.11	69-77
26-30	1.10	1.07	78-86
31-35	1.05	1.04	87-95
36-40	1.00	1.00	96-104
41-45	0.95	0.96	105-113
46-50	0.89	0.92	114-122
51-55	0.84	0.88	123-131
56-60	0.77	0.83	132-140
61-65	0.71	0.78	141-149
66-70	0.63	0.73	150-158
71-75	0.55	0.68	159-167
76-80	0.45	0.62	168-176
81-85	0.32	0.55	177-185
86-90	-	0.48	186-194
91-95	-	0.39	195-203
96-100	-	0.28	204-212

Table 310.60(C)(67) Ampacities of Insulated Single Copper Conductor Cables Triplexed in Air Based on Conductor Temperatures of 90°C (194°F) and 105°C (221°F) and Ambient Air Temperature of 40°C (104°F)*

Conductor Size (AWG or kcmil)	Temperature Rating of Conductor [See Table 310.104(C).]			
	2001-5000 Volts Ampacity		5001-35,000 Volts Ampacity	
	90°C (194°F) Type MV-90	105°C (221°F) Type MV-105	90°C (194°F) Type MV-90	105°C (221°F) Type MV-105
8	65	74	-	-
6	90	99	100	110
4	120	130	130	140
2	160	175	170	195
1	185	205	195	225
1/0	215	240	225	255
2/0	250	275	260	295
3/0	290	320	300	340
4/0	335	375	345	390
250	375	415	380	430
350	465	515	470	525
500	580	645	580	650
750	750	835	730	820
1000	880	980	850	950

*Refer to 310.60(C)(4) for the ampacity correction factors where the ambient air temperature is other than 40°C (104°F).

Table 310.60(C)(68) Ampacities of Insulated Single Aluminum Conductor Cables Triplexed in Air Based on Conductor Temperatures of 90°C (194°F) and 105°C (221°F) and Ambient Air Temperature of 40°C (104°F)*

Conductor Size (AWG or kcmil)	Temperature Rating of Conductor [See Table 310.104(C).]			
	2001-5000 Volts Ampacity		5001-35,000 Volts Ampacity	
	90°C (194°F) Type MV-90	105°C (221°F) Type MV-105	90°C (194°F) Type MV-90	105°C (221°F) Type MV-105
8	50	57	-	-
6	70	77	75	84
4	90	100	100	110
2	125	135	130	150
1	145	160	150	175
1/0	170	185	175	200
2/0	195	215	200	230
3/0	225	250	230	265
4/0	265	290	270	305
250	295	325	300	335
350	365	405	370	415
500	460	510	460	515
750	600	665	590	660
1000	715	800	700	780

*Refer to 310.60(C)(4) for the ampacity correction factors where the ambient air temperature is other than 40°C (104°F).

Table 310.60(C)(69) Ampacities of Insulated Single Copper Conductor Isolated in Air Based on Conductor Temperatures of 90°C (194°F) and 105°C (221°F) and

Ambient Air Temperature of 40°C (104°F)*

Conductor Size (AWG or kcmil)	Temperature Rating of Conductor [See Table 310.104(C).]					
	2001-5000 Volts Ampacity		5001-15,000 Volts Ampacity		15,001-35,000 Volts Ampacity	
	90°C (194°F) Type MV-90	105°C (221°F) Type MV-105	90°C (194°F) Type MV-90	105°C (221°F) Type MV-105	90°C (194°F) Type MV-90	105°C (221°F) Type MV-105
8	83	93	-	-	-	-
6	110	120	110	125	-	-
4	145	160	150	165	-	-
2	190	215	195	215	-	-
1	225	250	225	250	225	250
1/0	260	290	260	290	260	290
2/0	300	330	300	335	300	330
3/0	345	385	345	385	345	380
4/0	400	445	400	445	395	445
250	445	495	445	495	440	490
350	550	615	550	610	545	605
500	695	775	685	765	680	755
750	900	1000	885	990	870	970
1000	1075	1200	1060	1185	1040	1160
1250	1230	1370	1210	1350	1185	1320
1500	1365	1525	1345	1500	1315	1465
1750	1495	1665	1470	1640	1430	1595
2000	1605	1790	1575	1755	1535	1710

*Refer to 310.60(C)(4) for the ampacity correction factors where the ambient air temperature is other than 40°C (104°F).