Table 2 (Continued)

Cord or cable type	Conductor size**	Diameter of individual wires			
		Minimum		Maximum	
		mm	(in)	mm	(in)
§ All conductors of Type DRT[c] cable in sizes 5.26 mm^2 (10 AWG) and larger shall be composed of not fewer than 49 strands, except for sizes 3.31 mm – 5.26 mm^2 (12 – 10 AWG) grounding conductors; for these sizes the grounding conductors may employ a minimum of 7 strands.					
[&]See 4.7.3 for hoistway cable conductors.					

Table 3
Lay of conductor strands

(See Clauses 4.1.1.7.2.1, 4.1.1.7.2.2, 4.1.1.7.2.4, and 4.4.1.2.)

Conductor size, mm^2 (AWG)	Maximum length of lay		
	Bunch-stranded (lay of wires), mm (in)	Rope-stranded (lay of rope), mm (in)	Bunch- or rope-strand for HPN and HPNW[c,u](lay of wires), mm (in)
0.162 (25)	32 (1.25)*	–	–
0.205 (24)	32 (1.25)*	–	–
0.259 (23)	32 (1.25)*	–	–
0.325 (22)	32 (1.25)*	–	–
0.519 (20)	32 (1.25)	44 (1.75)	–
0.824 (18)	32 (1.25)	44 (1.75)	25 (1.00)
1.04 (17)	32 (1.25)	44 (1.75)	25 (1.00)
1.31 (16)	38 (1.50)	57 (2.25)	32 (1.25)
1.65 (15)	38 (1.50)	57 (2.25)	32 (1.25)
2.08 (14)	44 (1.75)	64 (2.50)	41 (1.60)
2.63 (13)	44 (1.75)	64 (250)	41 (1.06)
3.31 (12)	51 (2.00)	76 (3.00)	51 (2.00)
4.17 (11)	51 (2.00)	76 (3.00)	–
5.26 (10)	64 (2.50)	76 (3.00)	–
6.63 (9)	64 (2.50)	76 (3.00)	–
8.37 (8)	70 (2.75)	76 (3.00)	–
10.6 (7)	–	89 (3.50)	–
13.3 (6)	–	89 (3.50)	–
16.8 (5)	–	114 (450)	–
21.2 (4)	–	114 (4.50)	–
26.7 (3)	–	140 (5.50)	–
33.6 (2)	–	140 (5.50)	–
42.4 (1) or larger	–	16 times finished stranded conductor diameter	–
** For Types CXTW[u] and XTW[u], and signal conductors in electric vehicle cables. See Clause 4.1.1.7.2.2.*			

Table 4
Maximum direct current resistance of stranded and solid conductors at 20°C, Ω/km

(See Clause 4.1.1.3.1.)

Conductor size		Bare copper		Coated copper	
mm^2	(AWG/kcmil)	Solid	Stranded*	Solid	Stranded*
0.162	(25)	108	112.7	112.8	118.7
0.205	(24)	85.9	89.2	89.3	94.0
0.259	(23)	68.0	70.6	70.7	74.4
0.325	(22)	54.0	56.8	56.2	59.7
0.519	(20)	34.0	35.7	35.3	37.6
0.824	(18)	21.4	22.4	22.2	23.6
1.04	(17)	16.9	17.8	17.6	18.7
1.31	(16)	13.4	14.1	14.0	14.9
1.65	(15)	10.6	11.2	11.1	11.5
2.08	(14)	8.45	8.88	8.79	9.34
2.63	(13)	6.69	7.02	6.95	7.39
3.31	(12)	5.31	5.58	5.53	5.88
4.17	(11)	–	4.43	–	4.79
5.26	(10)	–	3.51	–	3.70
6.63	(9)	–	2.78	–	3.03
8.37	(8)	–	2.23	–	2.35
10.6	(7)	–	1.77	–	1.86
13.3	(6)	–	1.40	–	1.48
16.8	(5)	–	1.11	–	1.17
21.2	(4)	–	0.882	–	0.928
26.7	(3)	–	0.700	–	0.736
33.6	(2)	–	0.555	–	0.584
42.4	(1)	–	0.440	–	0.463
53.5	(1/0)	–	0.351	–	0.368
67.4	(2/0)	–	0.279	–	0.293
85.0	(3/0)	–	0.220	–	0.231
107.2	(4/0)	–	0.174	–	0.183
127	(250)	–	0.148	–	0.156
152	(300)	–	0.125	–	0.131
177	(350)	–	0.105	–	0.111
203	(400)	–	0.092	–	0.097
228	(450)	–	0.082	–	0.086
253	(500)	–	0.075	–	0.079

** Applicable for all types of stranding.*

Table 5
Maximum direct current resistance of stranded and solid conductors at 25°C, Ω/km

(See Clause 4.1.1.3.1.)

Conductor size		Bare copper		Coated copper	
mm^2	(AWG/kcmil)	Solid	Stranded*	Solid	Stranded*
0.162	(25)	109.7	114.5	114.6	120.6
0.205	(24)	87.3	91.8	91.1	97.0
0.259	(23)	69.1	71.7	71.8	75.9
0.325	(22)	55.1	57.9	57.3	60.9
0.519	(20)	34.7	36.4	36.0	38.4
0.824	(18)	21.8	22.8	22.6	24.1
1.04	(17)	17.2	18.2	18.0	19.1
1.31	(16)	13.7	14.4	14.3	15.2
1.65	(15)	10.8	11.4	11.3	11.8
2.08	(14)	8.62	9.06	8.97	9.53
2.63	(13)	7.17	7.38	7.31	7.77
3.31	(12)	5.42	5.69	5.64	6.00
4.17	(11)	–	4.64	–	4.89
5.26	(10)	–	3.58	–	3.77
6.63	(9)	–	2.93	–	3.09
8.37	(8)	–	2.27	–	2.40
10.6	(7)	–	1.80	–	1.90
13.3	(6)	–	1.43	–	1.51
16.8	(5)	–	1.13	–	1.19
21.2	(4)	–	0.900	–	0.947
26.7	(3)	–	0.714	–	0.746
33.6	(2)	–	0.566	–	0.596
42.4	(1)	–	0.449	–	0.473
53.5	(1/0)	–	0.358	–	0.376
67.4	(2/0)	–	0.285	–	0.300
85.0	(3/0)	–	0.224	–	0.236
107.2	(4/0)	–	0.178	–	0.187
127	(250)	–	0.151	–	0.159
152	(300)	–	0.128	–	0.134
177	(350)	–	0.107	–	0.113
203	(400)	–	0.094	–	0.099
228	(450)	–	0.083	–	0.088
253	(500)	–	0.077	–	0.080

** Applicable for all types of stranding.*

Table 6
Maximum direct current resistance of stranded and solid conductors at 20°C, Ω/1000 ft

(See Clause 4.1.1.3.1.)

Conductor size		Bare copper		Coated copper	
mm^2	(AWG/kcmil)	Solid	Stranded*	Solid	Stranded*
0.162	(25)	32.9	34.3	34.4	36.2
0.205	(24)	26.2	27.4	27.1	28.9
0.259	(23)	20.7	21.5	21.6	22.6
0.325	(22)	16.5	17.3	17.1	18.2
0.519	(20)	10.4	10.9	10.8	11.5
0.824	(18)	6.52	6.83	6.77	7.20
1.04	(17)	5.15	5.43	5.37	5.70
1.31	(16)	4.09	4.30	4.27	4.54
1.65	(15)	3.25	3.41	3.41	3.55
2.08	(14)	2.58	2.71	2.68	2.85
2.63	(13)	2.10	2.21	2.19	2.32
3.31	(12)	1.62	1.70	1.69	1.79
4.17	(11)	–	1.39	–	1.46
5.26	(10)	–	1.07	–	1.13
6.63	(9)	–	0.880	–	0.923
8.37	(8)	–	0.690	–	0.716
10.6	(7)	–	0.547	–	0.568
13.3	(6)	–	0.427	–	0.451
16.8	(5)	–	0.339	–	0.358
21.2	(4)	–	0.269	–	0.283
26.7	(3)	–	0.213	–	0.224
33.6	(2)	–	0.169	–	0.178
42.4	(1)	–	0.134	–	0.141
53.5	(1/0)	–	0.107	–	0.113
67.4	(2/0)	–	0.085	–	0.090
85.0	(3/0)	–	0.067	–	0.071
107.2	(4/0)	–	0.053	–	0.056
127	(250)	–	0.045	–	0.048
152	(300)	–	0.038	–	0.040
177	(350)	–	0.033	–	0.035
203	(400)	–	0.029	–	0.031
228	(450)	–	0.026	–	0.027
253	(500)	–	0.023	–	0.025

** Applicable for all types of stranding.*

Table 7
Maximum direct current resistance of stranded and solid conductors at 25°C, Ω/1000 ft

(See Clause 4.1.1.3.1.)

Conductor size		Bare copper		Coated copper	
mm^2	(AWG/kcmil)	Solid	Stranded*	Solid	Stranded*
0.162	(25)	33.5	34.8	34.9	37.5
0.205	(24)	26.7	28.1	27.8	29.3
0.259	(23)	21.1	21.9	22.0	23.0
0.325	(22)	16.8	17.7	17.5	18.6
0.519	(20)	10.6	11.1	11.0	11.7
0.824	(18)	6.65	6.95	6.89	7.35
1.04	(17)	5.24	5.55	5.49	5.82
1.31	(16)	4.18	4.39	4.36	4.63
1.65	(15)	3.30	3.47	3.45	3.62
2.08	(14)	2.63	2.76	2.73	2.91
2.63	(13)	2.14	2.25	2.23	2.37
3.31	(12)	1.65	1.73	1.72	1.83
4.17	(11)	–	1.41	–	1.49
5.26	(10)	–	1.09	–	1.15
6.63	(9)	–	0.865	–	0.941
8.37	(8)	–	0.692	–	0.732
10.6	(7)	–	0.548	–	0.580
13.3	(6)	–	0.436	–	0.460
16.8	(5)	–	0.345	–	0.364
21.2	(4)	–	0.274	–	0.289
26.7	(3)	–	0.217	–	0.229
33.6	(2)	–	0.173	–	0.182
42.4	(1)	–	0.137	–	0.144
53.5	(1/0)	–	0.109	–	0.115
67.4	(2/0)	–	0.087	–	0.092
85.0	(3/0)	–	0.069	–	0.073
107.2	(4/0)	–	0.055	–	0.058
127	(250)	–	0.046	–	0.049
152	(300)	–	0.039	–	0.041
177	(350)	–	0.033	–	0.035
203	(400)	–	0.029	–	0.031
228	(450)	–	0.026	–	0.027
253	(500)	–	0.023	–	0.025

** Applicable for all types of stranding.*

Table 8
Insulations

(See Clause 4.1.2.)

Class no.	Material type	Material description	Temperature rating, maximum, °C		
			Dry	Wet	Oil
1	Thermoset	NR or IR, SBR, EP or a blend thereof	60	60	60
2	Thermoset	NR or IR, SBR, EP or a blend thereof	75	60	60
3	Thermoset	NR or IR, SBR, IIR, EP, or a blend thereof	90	60	60
4	Thermoplastic	PVC	60	60	60
5	Thermoplastic	PVC	75	60	60
6	Thermoplastic	PVC	90	60	60
7	Thermoplastic	PVC	105	60	60
8	Thermoplastic	PE	60	–	–
9	Thermoplastic	PE	75	–	–
10	Thermoset	XL	90	–	–
11	Thermoset	XL	105	–	–
12	Thermoset	CR, CSM, CPE, NBR/PVC	90	60	60
13	Thermoset	CR, CSM, CPE, NBR/PVC	60	60	60
14	Thermoplastic	TPE	60	60	60
15	Thermoplastic	TPE	90	60	60
16	Thermoplastic	TPE	105	60	60
17	Thermoplastic	PVC	90	–	–
18	Thermoset	CPE, CSM	105	60	60
19	Thermoset	EP	105	60	60
20	Thermoplastic	FEP	105	–	–

Legend:

NR or IR = *natural rubber or polyisoprene rubber*

SBR = *styrene-butadiene rubber*

EP = *ethylene propylene rubber*

IIR = *isobutylene-isoprene rubber*

CPE = *chlorinated polyethylene*

CR = *polychloroprene*

CSM = *chloro-sulphonyl-polyethylene*

TPE = *thermoplastic elastomer*

PVC = *polyvinyl chloride or copolymer of vinyl chloride and vinyl acetate*

PE = *polyethylene*

XL = *cross-linked polyethylene*

FEP = *fluorinated ethylene propylene*

NBR = *acrylonitrile butadiene rubber*

Table 9
Physical properties – insulation (before aging)

(See Clauses 5.1.1, 5.2.8, and 6.2.6.2.)

Class no.	Temperature rating, maximum, °C			Material type	Before aging	
	Dry	Wet	Oil		Minimum elongation percent	Tensile strength, MPa (lbf/in^2)
1	60	60	60	Thermoset	200	3.4 (500)
2	75	60	60	Thermoset	200	3.4 (500)
3	90	60	60	Thermoset	200	3.4 (500)
4	60	60	60	Thermoplastic	100	10.3 (1500)
5	75	60	60	Thermoplastic	100	10.3 (1500)
6	90	60	60	Thermoplastic	100	10.3 (1500)
7	105	60	60	Thermoplastic	100	10.3 (1500)
8	60	–	–	Thermoplastic	350	9.65 (1400)
9	75	–	–	Thermoplastic	350	9.65 (1400)
10	90	–	–	Thermoset	150	10.3 (1500)
11	105	–	–	Thermoset	150	10.3 (1500)
12	90	60	60	Thermoset	200	8.3 (1200)
13	60	60	60	Thermoset	200	8.3 (1200)
14	60	60	60	Thermoplastic	200	5.5 (800)
15	90	60	60	Thermoplastic	200	5.5 (800)
16	105	60	60	Thermoplastic	200	5.5 (800)
17	90	–	–	Thermoplastic	100	10.3 (1500)
18	105	60	60	Thermoset	200	8.3 (1200)
19	105	60	60	Thermoset	200	3.4 (500)
20	105	–	–	Thermoplastic	200	17.4 (2500)

(Continued)

Table 9
Physical properties – insulation (after aging)

Class no.	After aging							
	Air oven test				Oil immersion test*			
	Oven temp., °C ±2	Time, d	Minimum percentage of unaged value		IRM 902 Oil		Minimum percentage of unaged value	
			Elongation, percent	Tensile strength, percent	Oil temp., °C ±2	Time, h	Elongation, percent	Tensile strength, percent
1	70	7	65	60	N/A	–	–	–
2	100	10	50	50	N/A	–	–	–
3	110	10	50	50	N/A	–	–	–
4	100	7	65	85	N/A	–	–	–
5	100	10	65	85	N/A	–	–	–
6	121	7	65	85	N/A	–	–	–
7	136	7	65	85	N/A	–	–	–
8	70	2	75	N/A	N/A	–	–	–
9	100	2	75	N/A	N/A	–	–	–
10	121	7	45	70	N/A	–	–	–
11	136	7	45	70	N/A	–	–	–
12	110	10	50	50	121	18†	60†	60†

Table 9 Continued on Next Page

Table 9 (Continued)

Class no.	After aging							
	Air oven test				Oil immersion test*			
			Minimum percentage of unaged value		IRM 902 Oil		Minimum percentage of unaged value	
	Oven temp., °C ±2	Time, d	Elongation, percent	Tensile strength, percent	Oil temp., °C ±2	Time, h	Elongation, percent	Tensile strength, percent
13	70	7	65	75	121	18†	60†	60†
14	100	7	75	75	N/A	–	–	–
15	121	7	75	75	N/A	–	–	–
16	136	7	75	75	N/A	–	–	–
17	121	14	65	85	N/A	–	–	–
18	136	7	50	50	121	18†	60†	60†
19	136	7	50	50	N/A	–	–	–
20	232	7	75	75	N/A	–	–	–

** The incorporation of an oil-resistant insulation in a finished jacketed cord shall be permitted provided that the insulation is subjected to the specified oil test in Table 12 for the jacket being used. Cords having both insulations and jacket materials meeting the oil resistance test shall be marked in accordance with Clause 6.2.6.2.*

† Required for HPN and HPNW^{c,u} only.

Note: *Interchanging insulation materials within the table shall be permitted (see Clause 4.1.2.1).*

Table 10
Lay of conductors – Service cords and electric vehicle cables

(See Clauses 4.1.4.1.1, 4.4.4.2, and 4.5.4.2.1.)

Type	Size of circuit conductor, mm^2 (AWG)**	Maximum lay of twist, mm (in)				
		Two-conductor*	Three-conductor*	Four-conductor	Five-conductor	Six-conductor
SV, SVO, SVOO, SVT, SVTO, SVTOO, SVE, SVEO, SVEOO	0.824 (18)	35 (1.38)	44 (1.75)	–	–	–
	1.04 (17)	38 (1.50)	51 (2.00)	–	–	–
	1.31 (16)	38 (1.50)	51 (2.00)	–	–	–
TST	0.100 (27)	35 (1.38)	—	—	—	—
SJ, SJO, SJOO, SJOW, SJOOW, S, SO, SOO, SOW, SOOW, SJT, SJTO, SJTOO, SJTW, SJTOW, SJTOOW, ST, STO, STOO, STW, STOW, STOOW, SJE, SJEO, SJEOO, SJEW, SJEOW, SJEOOW, SE, SEO, SEOO, SEW, SEOW, SEOOW, C^u, PD^u, HPD^u**, HSJ**, HSJW^{c,u}**, HSJO**, HSJOW**, HSJOO**, HSJOOW**	0.824 (18)	51 (2.00)	57 (2.25)	64 (2.50)	76 (3.00)	89 (3.50)
	1.04 (17)	51 (2.00)	57 (2.25)	64 (2.50)	76 (3.00)	89 (3.50)
	1.31 (16)	57 (2.25)	64 (2.50)	70 (2.75)	89 (3.50)	108 (4.25)
	1.65 (15)	57 (2.25)	64 (2.50)	70 (2.75)	89 (3.50)	108 (4.25)
	2.08 (14)	64 (2.50)	83 (3.25)	95 (3.75)	121 (4.75)	140 (5.50)
	2.63 (13)	64 (2.50)	83 (3.25)	95 (3.75)	121 (4.75)	140 (5.50)
	3.31 (12)	76 (3.00)	89 (3.50)	108 (4.25)	140 (5.50)	165 (6.50)
	4.17 (11)	76 (3.00)	89 (3.50)	108 (4.25)	140 (5.50)	165 (6.50)
	5.26 (10)	89 (3.50)	108 (4.25)	121 (4.75)	152 (6.00)	178 (7.00)

Table 10 Continued on Next Page

Table 10 (Continued)

Type	Size of circuit conductor, mm² (AWG)**	Maximum lay of twist, mm (in)				
		Two-conductor*	Three-conductor*	Four-conductor	Five-conductor	Six-conductor
S, SO, SOO, SOW, SOOW, ST, STO, STOO, STW, STOW, STOOW, SE, SEO, SEOO, SEW, SEOW, SEOOW	6.63 (9)	89 (3.50)	108 (4.25)	121 (4.75)	15 times the overall diameter of the conductor assembly under the jacket	15 times the overall diameter of the conductor assembly under the jacket
	8.37 (8)	114 (4.50)	127 (5.00)	152 (6.00)	–	–
	10.6 (7)	114 (4.50)	127 (500)	152 (6.00)	–	–
	13.3 (6)	127 (5.00)	152 (6.00)	178 (7.00)	–	–
	16.8 (5)	127 (5.00)	152 (6.00)	178 (7.00)		
	21.2 (4)	152 (6.00)	178 (7.00)	216 (9.50)	–	–
	26.7 (3)	152 (6.00)	178 (7.00)	216 (9.50)		
	33.6 (2)	178 (7.00)	203 (8.00)	254 (10.00)	–	–
DRT[c], SRD[m,u], SRDT[m,u], SRDE[m,u]	5.26 (10)		108 (4.25)	120 (4.72)	–	–
	6.63 (9)		108 (4.25)	121 (4.75)		
	8.37 (8)		127 (5.00)	150 (5.91)	–	–
	13.3 (6)		152 (6.00)	180 (7.09)	–	–
	21.2 (4)		178 (7.00)	220 (8.66)	–	–
EVJ, EVJE, EVJT, EV, EVE, EVT	All	15 times the overall diameter of the conductor assembly under the jacket	15 times the overall diameter of the conductor assembly under the jacket	15 times the overall diameter of the conductor assembly under the jacket	15 times the overall diameter of the conductor assembly under the jacket	15 times the overall diameter of the conductor assembly under the jacket

** In Mexico, the following applies. As an alternative to the values of the table, untwisted conductors shall be permitted for two- or three-conductor constructions.*

*** Two, three, and four conductors only.*

Table 11
Jackets

(See Clause 4.1.6.)

Class no.	Material type	Material description	Temperature ratings, maximum, °C	
			Dry	Oil
1.1	Thermoset	NR or IR, SBR, EP or a blend thereof	60	–
1.2	Thermoset	CR, CSM, EP, NBR/PVC, CPE	60	60
1.3	Thermoset	CR, CSM, EP, NBR/PVC, CPE	75	60
1.4	Thermoset	CR, CSM, EP, NBR/PVC, CPE	90	60
1.5	Thermoplastic	PVC	60	60
1.6	Thermoplastic	PVC	75	60
1.7	Thermoplastic	PVC	90	60
1.8	Thermoplastic	PVC	105	60
1.9	Thermoplastic	TPE	60	60
1.10	Thermoplastic	TPE	90	60

Table 11 Continued on Next Page

Table 11 (Continued)

Class no.	Material type	Material description	Temperature ratings, maximum, °C	
			Dry	Oil
1.11	Thermoplastic	TPE	105	60
1.12	Thermoset	CPE, CSM, EP	105	60

Legend:

NR or IR = *natural rubber or polyisoprene rubber*

SBR = *styrene-butadiene rubber*

EP = *ethylene propylene rubber*

CPE = *chlorinated polyethylene*

CR = *polychloroprene*

CSM = *chloro-sulphonyl-polyethylene*

TPE = *thermoplastic elastomer*

PVC = *polyvinyl chloride or copolymer of vinyl chloride and vinyl acetate*

NBR = *acrylonitrile butadiene rubber*

Note: *Due to possible incompatibility, TPE material of styrenic type is in some cases not suitable for use in cords where direct contact with PVC can occur. A separator is one acceptable means of avoiding direct contact. Other combinations of materials that could be incompatible, if any, are as yet undetected.*

Table 12
Physical properties – Jackets (before aging)

(See Clauses 5.1.2, 6.2.6.1, and 6.2.6.2.)

Class no.	Temperature rating, maximum, °C		Material type	Before aging	
				Minimum Elongation	Tensile strength,
	Dry	Oil		percent	MPa (lbf/in^2)
1.1	60	–	Thermoset	200	8.3 (1200)
1.2	60	60	Thermoset	200†	8.3 (1200)
1.3	75	60	Thermoset	200	8.3 (1200)
1.4	90	60	Thermoset	200	8.3 (1200)
1.5	60	60	Thermoplastic	100	10.3 (1500)
1.6	75	60	Thermoplastic	100	10.3 (1500)
1.7	90	60	Thermoplastic	100	10.3 (1500)
1.8	105	60	Thermoplastic	100	10.3 (1500)
1.9	60	60	Thermoplastic	200	8.3 (1200)
1.10	90	60	Thermoplastic	200	8.3 (1200)
1.11	105	60	Thermoplastic	200	8.3 (1200)
1.12	105	60	Thermoset	200	8.3 (1200)

(Continued)