Cord Technical Information

As applications become more intricate, specifying wire and cable products to meet commercial, industrial and specialty requirements has become more time-consuming and complex.

Today's designers, installers and contractors must be aware not only of general power transmission types but also of the myriad of materials available to meet specific environmental and electrical performance criteria.

This technical section is presented to aid in the selection of cord products to best suit specific designs and applications.

For technical issues and questions, please contact your local Prysmian Group distributor, your retailer or your Inside Sales Representative.

AWG to Metric Conversion Chart

SIZE (AWG)	mm^2	SIZE (AWG)	mm^2
18	0.82	1/0	53.5
16	1.31	2/0	64.4
14	2.08	3/0	85.0
12	3.31	4/0	107.0
10	5.26	250	127.0
9	6.63	300	152.0
8	8.37	350	177.0
6	13.30	500	253.0
4	21.15	600	304.0
2	33.62	750	380.0
1	42.40	1000	507.0

Common Wire Conductor Stranding

STRANDING CLASS	14–2 AWG	1–4/0 AWG	250 MCM – 500 MCM
B	7 STR	19 STR	37 STR
C	19 STR	37 STR	61 STR
D	37 STR	61 STR	91 STR
G	49 STR	133 STR	259 STR
H	133 STR	259 STR	427 STR
I	All sizes use 24 AWG wires		
K	All sizes use 30 AWG wires		
M	All sizes use 34 AWG wires		

Bend Radius Calculation per ICEA

Bend Radius = 6 x nominal OD (typically in inches)

Applies to the following cable types:

SJ	G-GC
SO	Welding
W	Stage Lighting & Entertainment
G	

Class K Copper Stranding

Size	Rope-Lay with Bunch Stranding		Bunch Stranding		Weight
AWG or kcmil	Nominal Number of 30 AWG Wires	Strand Construction	Nominal Number of 30 AWG Wires	Approx. O.D. (inches)	lbs./1000 ft.
1,000	10,101	37 x 7 x 39	10,101	1.419	3,270
900	9,065	37 x 7 x 35	9,065	1.323	2,935
800	7,980	19 x 7 x 60	7,980	1.305	2,585
750	7,581	19 x 7 x 57	7,581	1.276	2,455
700	6,916	19 x 7 x 52	6,916	1.207	2,240
650	6,517	19 x 7 x 49	6,517	1.166	2,110
600	5,985	19 x 7 x 45	5,985	1.125	1,940
550	5,453	19 x 7 x 41	5,453	1.056	1,765
500	5,054	19 x 7 x 38	5,054	0.988	1,635
450	4,522	19 x 7 x 34	4,522	0.933	1,465
400	3,990	19 x 7 x 30	3,990	0.878	1,290
350	3,458	19 x 7 x 26	3,458	0.809	1,120
300	2,989	7 x 7 x 61	2,989	0.768	960
250	2,499	7 x 7 x 51	2,499	0.682	802
4/0	2,107	7 x 7 x 43	2,107	0.627	676
3/0	1,666	7 x 7 x 34	1,666	0.533	535
2/0	1,323	7 x 7 x 27	1,323	0.470	425
1/0	1,064	19 x 56	1,064	0.451	338
1	836	19 x 44	836	0.397	266
2	665	19 x 35	665	0.338	211
3	532	19 x 28	532	0.304	169
4	420	7 x 60	420	0.272	132
5	336	7 x 48	336	0.235	106
6	266	7 x 38	266	0.202	84
7	210	7 x 30	210	0.179	66
8	168	7 x 24	168	0.157	53
9	133	7 x 19	133	0.146	42
10	–	–	104	0.126	32.5
12	–	–	65	0.101	20.3
14	–	–	41	0.078	12.8
16	–	–	26	0.060	8.0
18	–	–	16	0.048	5.0
20	–	–	10	0.038	3.2

Sources: ASTM B172 Specification for Rope-Lay-Stranded Copper Conductors Having Bunch-Stranded Members and ICEA S-68-516 (NEMA WC8).

Class M Copper Stranding

Size	Rope-Lay with Bunch Stranding		Bunch Stranding		Weight
AWG or kcmil	Nominal Number of 34 AWG Wires	Strand Construction	Nominal Number of 34 AWG Wires	Approx. O.D. (inches)	lbs./1000 ft.
1,000	25,193	61 x 7 x 59	25,193	1.404	3,240
900	22,631	61 x 7 x 53	22,631	1.331	2,910
800	20,069	61 x 7 x 47	20,069	1.256	2,580
750	18,788	61 x 7 x 44	18,788	1.207	2,415
700	17,507	61 x 7 x 41	17,507	1.183	2,250
650	16,226	61 x 7 x 38	16,226	1.133	2,085
600	14,945	61 x 7 x 35	14,945	1.084	1,920
550	13,664	61 x 7 x 32	13,664	1.035	1,755
500	12,691	37 x 7 x 49	12,691	0.997	1,630
450	11,396	37 x 7 x 44	11,396	0.940	1,465
400	10,101	37 x 7 x 39	10,101	0.901	1,300
350	8,806	37 x 7 x 34	8,806	0.825	1,130
300	7,581	19 x 7 x 57	7,581	0.768	975
250	6,384	19 x 7 x 48	6,384	0.713	821
4/0	5,320	19 x 7 x 40	5,320	0.645	684
3/0	4,256	19 x 7 x 32	4,256	0.576	547
2/0	3,325	19 x 7 x 25	3,325	0.508	427
1/0	2,646	7 x 7 x 54	2,646	0.423	337
1	2,107	7 x 7 x 43	2,107	0.376	268
2	1,666	7 x 7 x 34	1,666	0.337	212
3	1,323	7 x 7 x 27	1,323	0.305	169
4	1,064	19 x 56	1,064	0.269	134
5	836	19 x 44	836	0.240	105
6	665	19 x 35	665	0.215	84
7	532	19 x 28	532	0.196	67
8	420	7 x 60	420	0.162	53
9	336	7 x 48	336	0.146	42
10	259	7 x 37	259	0.126	32.5
12	168	7 x 24	168	0.101	21.0
14	–	–	104	0.078	12.8
16	–	–	65	0.060	8.0
18	–	–	41	0.048	5.0
20	–	–	26	0.038	3.2

Sources: ASTM B172 Specification for Rope-Lay-Stranded Copper Conductors Having Bunch-Stranded Members and ICEA S-68-516 (NEMA WC8).

Installation — Training and Bending Limitations

Physical Limitations Training and Bending

Overview

Training is the positioning of cable when it is not under tension. Bending is the positioning of cable when it is under tension. When installing cable, the object is to limit the mechanical forces so that the cable's physical and electrical characteristics are maintained for the expected service life. Bends in conductors, multiconductor cables or assemblies of conductors shall be made so that the cable will not be damaged.

A nonshielded cable can tolerate a sharper bend than a shielded cable. This is especially true for cables having helically applied metallic shielding tapes which, when bent too sharply, can separate or buckle and cut into the insulation. Remember that offsets are bends.

The problem is compounded by the fact that most tapes are under jackets that conceal such damage. The extruded polymers used for insulation shields have sufficient conductivity and coverage initially to pass acceptance testing, then fail prematurely due to corona at the shield/insulation interface.

Minimum Bending Radius in Accordance with National Electric Code

Voltage	Conductors	Shielding	Cable Types	Minimum Bending Radius as a Multiple of Conductor/Assembly Diameter		
600 V	Single	Nonshielded	All	5X		
601-2000 V			All	8X		
600 V or 2000 V	Multiconductor or Multiplexed	Nonshielded	TC or TC-ER	1 in. (25 mm) or less	Over 1 in. to 2 in. (>25 mm to 50 mm)	Over 2 in. (>50 mm)
				4X	5X	6X
			MC[1]	7X		
		Shielded	All	12X		
			TC or TC-ER	12X		
			MC	12X/7X[1]		

[1] Per 330.24B Interlocked-Type Armor or Corrugated Sheath.

Cord Product Coding System

Cord Packaging and Color Codes

Example: 02725.41.01

Product Number

Packaging Code Identification Numbers

CODE	PACKAGING	CODE	PACKAGING
15/R5	250' Spool	41	1000' Reel
18/R8	500' Spool	43	2000' Reel
21	1000' Spool	44	2500' Reel
24	2500' Spool	46	5000' Reel
35	250' Reel	85	250' Coil
38	500' Reel	99	LL Reel
40	LL Reel	XX	Shorts

Jacket Color Code Identification Numbers

CODE	COLOR	CODE	COLOR
01	Black	07	Blue
02	White	08	Brown
03	Red	10	Gray
04	Orange	13	Pink
05	Yellow	19	Purple
06	Green	77	Light Blue

Voltage Drop Calculations

To Find Volts Lost:

1. Multiply current (amperes) by the distance (feet in one conductor) by the figure in the table below for the type of system and wire used.
2. Place a decimal in front of the last six figures.
3. The result is number of volts lost.

Note: For AC 3 Phase Current Voltage Drop obtained is phase-to-phase.

WIRE SIZE	POWER FACTOR %	AC SINGLE PHASE	AC THREE PHASE	DC	WIRE SIZE	POWER FACTOR %	AC SINGLE PHASE	AC THREE PHASE	DC
14 AWG	100	5880	5090	5880	3/0 AWG	100	149	129	144
	90	5360	4640			90	179	155	
	80	4790	4150			80	181	156	
	70	4230	3660			70	177	153	
	60	3650	3160			60	171	148	
12 AWG	100	3690	3190	3690	4/0 AWG	100	121	104	114
	90	3380	2930			90	152	131	
	80	3030	2620			80	156	135	
	70	2680	2320			70	155	134	
	60	2320	2010			60	151	131	
10 AWG	100	2320	2010	2820	250 kcmil	100	102	89	97
	90	2150	1861			90	136	117	
	80	1935	1675			80	143	123	
	70	1718	1487			70	143	124	
	60	1497	1296			60	141	122	
8 AWG	100	1462	1265	1462	300 kcmil	100	86	75	81
	90	1373	1189			90	121	104	
	80	1248	1081			80	128	111	
	70	1117	969			70	131	113	
	60	981	849			60	130	113	
6 AWG	100	918	795	918	350 kcmil	100	74	64	69
	90	882	764			90	109	95	
	80	812	703			80	118	102	
	70	734	636			70	122	105	
	60	653	565			60	122	106	
4 AWG	100	578	501	578	400 kcmil	100	66	57	60
	90	571	494			90	101	88	
	80	533	462			80	111	96	
	70	489	423			70	115	99	
	60	440	381			60	116	101	
2 AWG	100	367	318	363	500 kcmil	100	54	47	48
	90	379	328			90	89	78	
	80	361	313			80	99	86	
	70	337	292			70	105	91	
	60	309	268			60	108	93	
1 AWG	100	291	252	288	600 kcmil	100	47	41	40
	90	311	269			90	83	72	
	80	299	259			80	93	81	
	70	284	246			70	99	86	
	60	264	229			60	103	89	
1/0 AWG	100	233	202	229	750 kcmil	100	39	34	32
	90	257	222			90	75	65	
	80	252	218			80	86	75	
	70	241	209			70	93	81	
	60	227	106			60	97	84	
2/0 AWG	100	187	162	181	1000 kcmil	100	31	27	24
	90	213	184			90	67	58	
	80	212	183			80	79	68	
	70	206	178			70	86	75	
	60	196	169			60	91	78	

Insulation and Jacket Properties

TYPICAL PROPERTIES OF COMMON INSULATING MATERIALS

PARAMETER	PVC	PE	PP	XLPE	NYLON	EPDM	TFE	BUTYL RUBBER	SILICONE RUBBER	TPR
Specific Gravity	1.37	0.92	0.89	0.93-1.18	1.09	1.43	2.17	1.40	1.60	1.16-1.20
Dielectric Constant										
(a) 60 Hz	6.0	2.26	2.6	3.0	4.6	3.4	2.1	4.1	3.3	2.8
(b) 1000 Hz	5.0	2.25		3.0	4.5	3.4	2.1	4.0	3.1	2.8
Dielectric Strength, v/mil										
(a) 0.010" wall	1800	2100	850	-	1000	700	2000	700	600	625
(b) 0.040" wall	800	1050	450	700	470	500	950	500	400	
Tensile Strength, PSI x 1000	1.5-3.8	1.4-2.4	2.9-4.5	1.8-2.5	8.8-11.9	0.8-1.2	2.0-6.0	0.5-1.5	0.6-1.2	2.3
Service Temp. Range, °C	-55/+105	-90/+90	-40/+105	-55/+105	-55/+105	-55/+105	-90/+260	-40/+90	-80/+200	-55/+90
Elongation, %	200-375	350-550	700	250-400	150-380	250-450	200-500	200-400	125-400	500
Water Absorption, % in 24 hr	<0.75	<0.02	<0.02	<0.01	2.5	<0.1	<0.01	<1.0	<1.0	<0.6
Flame Resistance	Self-Extinguishing	Support Flame	Support Flame	Slow Flame	Self-Extinguishing	Supports Flame	Non-Flammable	Slow Burning	Slow (Non-Cond. Ash)	Flammable
Ozone Resistance	Excellent	Good	Excellent	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent
Flexibility	Good	Good	Good	Good-Fair	Good-Fair	Excellent	Good	Excellent	Excellent	Excellent
Abrasion Resistance	Good	Good	Fair	Excellent	Excellent	Fair	Excellent	Poor	Poor	Good-Fair
Acid Resistance	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent
Base Resistance	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good	Excellent
Hydraulic Fluid Resistance	Good-Fair	Fair-Poor	Fair	Good-Fair	Good-Fair	Good-Fair	Excellent	Poor	Fair-Poor	Poor
Organic Solvent Resistance	Fair-Poor	Poor	Fair	Fair	Good-Fair	Fair-Poor	Excellent	Good-Fair	Poor	Poor

NOTE: The above is representative of performance. For specific compound performance, consult factory.

TYPICAL PROPERTIES OF COMMON JACKETING MATERIALS

PARAMETER	PVC	PE	NYLON	CPE	TFE	SILICONE RUBBER	NEOPRENE	POLY-URETHANE	TPR
Specific Gravity	1.37	0.92	1.09	1.46	2.17	1.24	1.52	1.3	1.16-1.20
Tensile Strength, PSI x 1000	1.5-3.8	1.4-2.4	8.8-119	1.2-2.0	2.0-6.0	0.6-1.2	1.5-2.5	>3.5	2.3
Elongation, %	200-375	350-550	150-380	300-500	200-500	125-400	300-500	540-700	500
Service Temp. Range,°C	-55/+105	-80/+75	-55/+105	-50/+105	-90/+200	-80/+200	-65/+90	-65/+75	-55/+90
Ozone Resistance	Excellent	Good	Good	Excellent	Excellent	Excellent	Excellent	Good	Excellent
Weatherability	Good-Fair	Excellent-Good	Fair-Poor	Excellent	Excellent	Excellent	Good	Good	Excellent
Flame Resistance	Self-Extinguishing	Supports Flame	Flammable	Self-Extinguishing	Non-Flammable	Slow-Burn (Non-Cond. Ash)	Self-Extinguishing	Slow-Burn	Flammable
Flexibility	Good	Good	Good-Fair	Excellent	Good	Excellent	Excellent	Excellent	Excellent
Abrasion Resistance	Good	Good	Excellent	Good	Excellent	Poor	Excellent	Excellent	Good-Fair
Acid Resistance	Excellent	Excellent	Poor	Good	Excellent	Poor	Good	Fair	Excellent
Base Resistance	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good	Fair	Excellent
Hydraulic Fluid Resistance	Good-Fair	Fair-Poor	Good-Fair	Good	Excellent	Fair-Poor	Good	Poor	Good
Organic Solvent Resistance	Fair-Poor	Poor	Good-Fair	Good	Excellent	Poor	Good	Poor	Poor
Resistance to Tearing	Good	Good	Excellent	Good	Good	Fair	Good	Excellent	Good-Fair

NOTE: The above is representative of performance. For specific compound performance, consult factory.

Government and Military Wire and Cable Specifications

J-C-90: Flexible cord and fixture wire.
J-C-96: Neoprene jacketed telephone wire.
J-C-580: Flexible cord and fixture wire.
J-C-0741: Rubber and/or neoprene welding cable.
MIL-C-17: Coaxial cable – polyethylene and Teflon dielectric.
MIL-C-915, MIL-C-2194: Shipboard cable.
MIL-C-1486: 10 conductor WM-46/U only.
MIL-C-3078: Cable, electric, insulated low tension single conductor.
MIL-C-3432: 300 volt and 600 volt rubber insulated power and control cable.
MIL-C-3458: Cables, telephone.
MIL-C-3702: Cable, power electrical, ignition, high tension.
MIL-C-3849: Tinsel cord. Light duty low voltage flexible cord for switchboards, microphones, telephones, etc.
MIL-C-3883: Cord electrical (audio frequency).
MIL-C-3884: Conductor electrical (short lay).
MIL-C-4839: KEL-F insulated cable, WF-15/U.
MIL-C-4866: RG-62 B/U cable.
MIL-C-4921A (ASG): Single conductor 8 AWG 5,000 volt cable with butyl compound insulation and polychloroprene. For airport lighting.
MIL-C-5136: Cable, power, electric, polychloroprene sheathed, buna compound insulated.
MIL-C-5767: Low temperature rubber portable cords.
MIL-C-6166: Cord, headset-microphone CX1301/AR.
MIL-C-7078: 600 volt aircraft cable.
MIL-C-8721 (ASG): Cable, ignition high tension, aircraft quality.
MIL-C-8721: Miniature coaxial cables with Teflon TFE cores.
MIL-C-8817 (ASG): Cable ignition, high tension, aircraft quality.
MIL-C-9360: RG 134/U cable
MIL-C-10065: Cables, special purpose electrical (multi-pair) audio frequency.
MIL-C-10369: Cable, telephone field, for rapid payout.
MIL-C-10392: Cables, special purpose, electric (miniature).
MIL-C-10581: Cables telephone, cable assemblies, telephone, coil assembly, telephone loading
MIL-C-11060: Cables, twisted pair, internal hook-up, unshielded and shielded.
MIL-C-11097: Cable, telephone (Wire W-50-A).
MIL-C-11311: Telephone cable types WD-31/U and WT-24/U.
MIL-C-11440: Cable, power electrical.
MIL-C-12064: Low temperature power cable and cords for Arctic service.
MIL-C-12423: Cable, telephone WD-33 U.
MIL-C-12881: Cables, telephone, switchboard (cable and cable assemblies).
MIL-C-12992: Cable assembly, power, electrical (Cord CX-227 TVQ- 1).
MIL-C-13066: Cable, telephone (submarine No. 19 AWG and No. 22 AWG).
MIL-C-13077: Cable, special purpose, electrical.
MIL-C-13486: Cables, special purpose electrical: low tension, heavy duty, single CDR & multiconductor shielded arid unshielded
MIL-C-13777: Multi-conductor missile ground support cable.
MIL-C-13892: Cable, telephone (flexible).
MIL-C-14189: Cable, power electrical, 3000 volt, for field use.
MIL-C-15325: Cable, tow, electric (three conductor).
MIL-C-15479: Cables, power, electrical, submarine, Navy Standard Harbor Defense.
MIL-C-18959: Cable power, electrical, portable neoprene jacketed 600 volt.
MIL-C-18961: Cable, special purpose, electrical and wire, electrical, shot
MIL-C-18962: Cable, power, electrical, direct burial, neoprene jacketed 600 volt.
MIL-C-19381 (Ships): Cables, special purpose, electrical nuclear plant.
MIL-C-19547: Cables, electrical, special purpose, shore use.
MIL-C-19638: Cables, power electric, submarine, Navy Harbor Defense.
MIL-C-19654: Cable, telephone, submarine.
MIL-C-19787: Cable, electric, torpedo, 65 conductor (torpedo control, electric setting).
MIL-C-19883: Cables, special purpose, electric, for remote control radar set AN/FPN-28.
MIL-C-21069: Cable, electrical, shield, 600 volt (non-flexing service).
MIL-C-22667: Cable, special purpose, buoyant, electrical (submarine use).
MIL-C-23020: Coaxial cable for use inside submarines (water blocked).
MIL-C-23206: Cable, special purpose, electrical. Silicone rubber, water blocked.
MIL-C-23437: Cable, electrical, shielded pairs.
MIL-C-24145 (Ships): Cable, electrical special purpose for shipboard use (water blocked and non-water blocked). Formerly BuShip 660 L.
MIL-C-24640: Cable, electrical, lightweight for shipboard use.
MIL-C-24643: Cable and cord, electrical, low-smoke for shipboard use.
MIL-C-25115: RG-62 C/U.
MIL-C-25509: RG-115 A U
MIL-C-26468 (USAF): Cables, guided missile, ground installation, general requirements for.
MIL-C-27072: Multi-conductor ground support cable.
MIL-C-27212: Cable, power, electrical, airport lighting control.
MIL-C-27500: Shielded and unshielded aircraft and missile cables.
MIL-C-36359 (USAF): Power cable of two voltage range for airport lighting 8 AWG (3,000-5,OOOV) CCLP insulated.
MIL-C-55021: Cables, twisted pairs and triples, internal hook-up, shielded and unshielded.
MIL-C-55036: Cable, telephone, WM130##/6.
MIL-E-9085 (USAF): Electrical cord, WM-85/u.
MIL-E-9088 (USAF): Electrical cord, WF-15/u.
MIL-R-833 (USAF): RF cable, RG12/u.
MIL-STD-122: Color code for chassis wiring for electronic equipment.
MIL-STD-681: Identification coding and application of hook-up wire.
MIL-W-76: General purpose hook-up wire. Vinyl insulated types LW, MW and HW.
MIL-W-438: Wire ignition electric power.
MIL-C-442: Thermoplastic or rubber jacketed two conductor parallel rip cord.
MIL-W-583: Wire, magnet, electrical.
MIL-W-3093: Wire, insulated, W-121, W-122, W-123, WD15/u, WD-16, WF-9/u, WT-3/u (distributing, frame wires).
MIL-W-3104: Wire, insulated No. 20 AWG, extra flexible.
MIL-W-3975: Wire, electrical (tinsel).
MIL-W-3861: Wire, electrical (bare copper).
MIL-W-5086: 600 volt aircraft wire (copper conductors).
MIL-W-5088: Installation of wiring and wiring devices in aircraft.
MIL-W-5274: Spec for aircraft wire, Type I 600V, Type II 600V, Type 111 300 rating
MIL-W-5845: Wire, electrical, iron and constantan, thermocouple.
MIL-W-5846: Wire, electrical, chromel and alumel, thermocouple.
MIL-W-5908: Wire, electrical, copper and constantan, thermocouple.
MIL-W-6370: Wire, electrical, insulated antenna.
MIL-W-7072: 600 volt aircraft wiring (aluminum conductors).
MIL-W-7500: Wire, electrical, WS-31-U.
MIL-W-8160: Installation of wire in guided missiles.
MIL-W-877: 600 volt silicone rubber insulated aircraft wire.
MIL-W-12349: KEL-F insulated hook-up wire.
MIL-W-12410: General purpose hook-up wire similar to MIL-W-76.
MIL-W-12995: Wire, electrical (W-29 and W-120).
MIL-W-13075: Wire, electrical
MIL-W-13169: Wire, electrical (for instrument test leads).
MIL-W-13241: Wire, electrical.
MIL-W-16400: General specification for electronic equipment, Naval ship and shore.
MIL-W-16878: Electronic hook-up wire. Includes vinyl (Types B, C, and D), Teflon (Types ET, E, EE, KT, K and KK) and polyethylene (Type J).
MIL-W-17211 (Ships): Wire, electrical, radio antenna 7/12, 7/14, 7/16, 7/18, 7/20, 7/22.
MIL-W-19150: Wire, insulated, hard drawn copper.
MIL-W-19583 (Navy): Wire, electrical, magnet, high temperature, film insulated.
MIL-W-21306: Wire, electrical twisted pair, color coded switchboard.
MIL-W-22759: Teflon and Tefzel insulated airframe wire.
MIL-W-25038: Wire, electrical, high temperature and fire-resistant aircraft.
MIL-W-27300: Teflon insulated 600 volt aircraft wire.
MIL-W-81044: Irradiated wire for aircraft and hook-up.
MIL-W-81381: Wire, electric polyamide insulated copper and copper alloy (Kapton H-film).
MIL-W-81822: Solid conductor, wire wrap insulated and uninsulated.
NAS-702: General purpose PVC insulated hook-up wire.
NAS-703: High temperature general purpose Teflon TFE insulated wire. Similar to Types E and EE of MIL-W-16878.