

Technical Information

As technology becomes more complex, specifying wire and cable products to meet system performance demands becomes more time-consuming and complex.

Today's system designer must be aware not only of the general transmission line types, but also of the myriad of materials available to meet specific environmental or electrical performance criteria.

This technical section is presented to aid in the selection of materials and designs which will best suit the combination of hardware and transmission media.

For technical questions regarding specific transmission designs or applications, please contact Prysmian's Engineering Department.

Insulation & Jacket Properties

TYPICAL PROPERTIES OF COMMON INSULATING MATERIALS

PARAMETER	PVC	PE	PP	XLPE	NYLON	FEP	TFE	BUTYL RUBBER	SILICONE RUBBER	TPR
Specific Gravity	1.37	0.92	0.89	0.93-1.18	1.09	2.16	2.17	1.40	1.24	1.16-1.20
Dielectric Constant (a) 60 Hz (b) 1000 Hz	6.0 5.0	2.26 2.26	2.6	3.0 3.0	4.6 4.5	2.15 2.15	2.1 2.1	4.1 4.0	3.3 3.1	2.8 2.8
Dielectric Strength, v/mil (a) 0.010" wall (b) 0.040" wall	1800 800	2100 1050	850 450	- 700	1000 470	2000 950	2000 950	700 500	600 400	625
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	2.3-3.1	2.0-6.0	0.5-1.5	0.6-1.2	2.3
Service Temp, Range, °C	-55/+105	-90/+90	-40/+105	-80/+75	-55/+105	-90/+200	-90/+260	-40/+90	-80/+200	-55/+90
Elongation, %	200-375	350-550	700	250-400	150-380	200-330	200-500	200-400	125-400	500
Water Absorption, % in 24 hr	<0.75	<0.02	<0.02	<0.01	2.5	<0.01	<0.01	<1.0	<1.0	<0.6
Flame Resistance	Self Extinguishing	Supports Flame	Supports Flame	Slow Flame	Self Extinguishing	Non-Flammable	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	Good	Good	Excellent	Excellent	Excellent
Abrasion Resistance	Good	Good	Fair	Excellent	Excellent	Excellent	Excellent	Poor	Poor	Good-Fair
Acid Resistance	Excellent	Excellent	Excellent	Excellent	Excellent	Poor	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	Excellent	Excellent	Poor	Fair-Poor	Poor
Organic Solvent Resistance	Fair-Poor	Poor	Fair	Fair	Good-Fair	Excellent	Excellent	Good-Fair	Poor	Poor

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

TYPICAL PROPERTIES OF COMMON JACKETING MATERIALS

PARAMETER	PVC	PE	NYLON	FEP	TFE	SILICONE RUBBER	NEOPRENE	POLY-URETHANE	TPR
Specific Gravity	1.37	0.92	1.09	2.16	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	8.8-11.9	2.3-3.1	2.0-6.0	0.6-1.2	2.5-4.0	>3.5	2.3
Elongation, %	200-375	350-550	150-380	200-330	200-500	125-400	300-500	540-700	500
Service Temp, Range, °C	-55/+105	-80/+75	-55/+105	-90/+200	-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	Non-Flammable	Non-Flammable	Slow-Burn (Non-Cond. Ash)	Self Extinguishing	Slow Burn	Flammable
Flexibility	Good	Good	Good-Fair	Good	Good	Excellent	Excellent	Excellent	Excellent
Abrasion Resistance	Good	Good	Excellent	Excellent	Excellent	Poor	Excellent	Excellent	Good-Fair
Acid Resistance	Excellent	Excellent	Poor	Excellent	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	Excellent	Excellent	Fair-Poor	Good	Poor	Good
Organic Solvent Resistance	Fair-Poor	Poor	Good-Fair	Excellent	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 Customer Service.

Decimal Conversion Factors

FRACTIONS, DECIMALS AND MILLIMETER CONVERSION CHART

FRACTIONS OF AN INCH						EQUIVALENTS		FRACTIONS OF AN INCH						EQUIVALENTS	
64	32	16	8	4	2	DECIMALS	mm	64	32	16	8	4	2	DECIMALS	mm
1						0.016	0.40	33						0.516	13.10
2	1					0.031	0.79	34	17					0.531	13.49
3						0.047	1.19	35						0.547	13.89
4	2	1				0.063	1.59	36	18	9				0.563	14.29
5						0.078	1.98	37						0.578	14.68
6	3					0.094	2.38	38	19					0.594	15.08
7						0.109	2.78	39						0.609	15.48
8	4	2	1			0.125	3.18	40	20	10	5			0.625	15.88
9						0.141	3.57	41						0.641	16.27
10	5					0.156	3.97	42	21					0.656	16.67
11						0.172	4.37	43						0.672	17.07
12	6	3				0.188	4.76	44	22	11				0.688	17.46
13						0.203	5.16	45						0.703	17.86
14	7					0.219	5.56	46	23					0.719	18.26
15						0.234	5.95	47						0.734	18.65
16	8	4	2	1		0.250	6.35	48	24	12	6	3		0.750	19.05
17						0.266	6.75	49						0.766	19.45
18	9					0.281	7.14	50	25					0.781	19.84
19						0.297	7.54	51						0.797	20.24
20	10	5				0.313	7.94	52	26	13				0.813	20.64
21						0.328	8.33	53						0.828	21.03
22	11					0.344	8.73	54	27					0.844	21.43
23						0.359	9.13	55						0.859	21.83
24	12	6	3			0.375	9.53	56	28	14	7			0.875	22.23
25						0.391	9.92	57						0.891	22.62
26	13					0.406	10.32	58	29					0.906	23.02
27						0.422	10.72	59						0.922	23.42
28	14	7				0.438	11.11	60	30	15				0.938	23.81
29						0.453	11.51	61						0.953	24.21
30	15					0.469	11.91	62	31					0.969	24.61
31						0.484	12.30	63						0.984	25.00
32	16	8	4	2	1	0.500	12.70	64	32	16	8	4	2	1.000	25.40

Unit Conversion Factors

CONVERSION FACTORS

UNIT	X	CONSTANT	=	UNIT	UNIT	X	CONSTANT	=	UNIT
British Thermal Unit (BTU)		778.0		foot-pound (ft-lb)	gallons (gal)		3.785411		liters (l)
British Thermal Unit (BTU)		1054.35		joules (j)	gallons (gal)		0.13368		cubic foot (ft ³)
British Thermal Unit (BTU)		0.293		watt-hours (w-hr)	gallons (gal)		231.0		cubic inch (in ³)
British Thermal Unit (BTU)		0.032808		feet (ft)	gallons (gal)		3785.411		cubic centimeter (cm ³)
British Thermal Unit (BTU)		0.3937		inches (in)	grams (g)		15.432		grains
centimeters (cm)		0.00001		kilometers (km)	gram/centimeter ³ (gm/cm ³)		0.0361275		pounds/in ³ (lb/in ³)
centimeters (cm)		0.010		meters (m)	horsepower (hp)		33013.26		ft-lb/min
centimeters (cm)		10.0		millimeters (mm)	horsepower (hp)		550.0		ft-lb/sec
centimeters (cm)		0.00064516		circular millimeters	horsepower (hp)		745.7		watts (w)
centimeters (cm)		0.000007854		inches ² (in ²)	horsepower (hp)		0.027178		yards (yd)
centimeters (cm)		0.00050671		square millimeters	inch (in)		0.083333		feet (ft)
circular mils (cmil)		0.7854		(mm ²)	inch (in)		0.00002540		kilometer (km)
circular mils (cmil)		0.000035314		mils ²	inch (in)		0.025400		meter (m)
circular mils (cmil)		0.061023		cubic foot (ft ³)	inch (in)		2.54000514		centimeter (cm)
circular mils (cmil)		0.000001		cubic inch (in ³)	inch (in)		25.4000514		millimeter (mm)
cubic centimeter (cm ³)		0.00026417		cubic meter (m ³)	inch (in)		1000.0		mils
cubic centimeter (cm ³)		1728.0		gallons (gal)	inch (in)		0.000948		British Thermal Unit (BTU)
cubic centimeter (cm ³)		28317.847		cubic in (in ³)	joules (j)		10 ⁷		ergs
cubic centimeter (cm ³)		0.00057870		cubic centimeter (cm ³)	joules (j)		61.02374		cubic inch (in ³)
cubic foot (ft ³)		0.000016387		cubic feet (ft ³)	liters (l)		1.093611		yard (yd)
cubic foot (ft ³)		16.387064		cubic meter (m ³)	meters (m)		3.2808333		feet (ft)
cubic inch (in ³)		1000000.0		cubic centimeter (cm ³)	meters (m)		39.37		inch (in)
cubic inch (in ³)		35.314666		centimeter (cm)	meters (m)		100.0		centimeter (cm)
cubic inch (in ³)		264.17		cubic foot (ft ³)	meters (m)		1760.0		yards (yd)
cubic meter (m ³)		0.00018939		gallons (gal)	miles (mi)		5280.0		feet (ft)
cubic meter (m ³)		0.33333		miles (mi)	miles (mi)		1.6093		kilometer (km)
cubic meter (m ³)		12		yards (yd)	miles (mi)		0.0032808		feet (ft)
feet (ft)		0.00030480		inches (in)	millimeters (mm)		0.03937		inch (in)
feet (ft)		0.30480		kilometer (km)	millimeters (mm)		0.001		meters (m)
feet (ft)		30.480		meters (m)	millimeters (mm)		0.01		centimeters (cm)
feet (ft)		304.80		centimeters (cm)	millimeters (mm)		39.3701		mils
feet (ft)		0.00067197		millimeters (mm)	millimeters (mm)		1000.0		microns (μ)
feet (ft)		0.001285		meters/grams (m/g)	millimeters (mm)		44.25		ft-lb/minute
feet (ft)		1.356		British Thermal Unit (BTU)	millimeters (mm)		44.25		ft-lb/sec
feet/pound (ft/lb)		0.1383		joules (j)	watts (w)		0.737562		horsepower
foot-pound (ft-lb)				kilogram/meter (kg/m)	watts (w)		0.001341		British Thermal Unit (BTU)
foot-pound (ft-lb)					watts (w)		3.414462		
foot-pound (ft-lb)					watt-hours (w-hr)				

Temperature Conversion Chart

To use this chart, find your known temperature (°F) in the shaded column.

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-45.0	-49.0	-17.2	1.0	10.6	51.0	38.3	101.0	66.1	151.0
-44.4	-48.0	-16.7	2.0	11.1	52.0	38.9	102.0	66.7	152.0
-43.9	-47.0	-16.1	3.0	11.7	53.0	39.4	103.0	67.2	153.0
-43.3	-46.0	-15.6	4.0	12.2	54.0	40.0	104.0	67.8	154.0
-42.8	-45.0	-15.0	5.0	12.8	55.0	40.6	105.0	68.3	155.0
-42.2	-44.0	-14.4	6.0	13.3	56.0	41.1	106.0	68.9	156.0
-41.7	-43.0	-13.9	7.0	13.9	57.0	41.7	107.0	69.4	157.0
-41.1	-42.0	-13.3	8.0	14.4	58.0	42.2	108.0	70.0	158.0
-40.6	-41.0	-12.8	9.0	15.0	59.0	42.8	109.0	70.6	159.0
-40.0	-40.0	-12.2	10.0	15.6	60.0	43.3	110.0	71.1	160.0
-39.4	-39.0	-11.7	11.0	16.1	61.0	43.9	111.0	71.7	161.0
-38.9	-38.0	-11.1	12.0	16.7	62.0	44.4	112.0	72.2	162.0
-38.3	-37.0	-10.6	13.0	17.2	63.0	45.0	113.0	72.8	163.0
-37.8	-36.0	-10.0	14.0	17.8	64.0	45.6	114.0	73.3	164.0
-37.2	-35.0	-9.4	15.0	18.3	65.0	46.1	115.0	73.9	165.0
-36.7	-34.0	-8.9	16.0	18.9	66.0	46.7	116.0	74.4	166.0
-36.1	-33.0	-8.3	17.0	19.4	67.0	47.2	117.0	75.0	167.0
-35.6	-32.0	-7.8	18.0	20.0	68.0	47.8	118.0	75.6	168.0
-35.0	-31.0	-7.2	19.0	20.6	69.0	48.3	119.0	76.1	169.0
-34.4	-30.0	-6.7	20.0	21.1	70.0	48.9	120.0	76.7	170.0
-33.9	-29.0	-6.1	21.0	21.7	71.0	49.4	121.0	77.2	171.0
-33.3	-28.0	-5.6	22.0	22.2	72.0	50.0	122.0	77.8	172.0
-32.8	-27.0	-5.0	23.0	22.8	73.0	50.6	123.0	78.3	173.0
-32.2	-26.0	-4.4	24.0	23.3	74.0	51.1	124.0	78.9	174.0
-31.7	-25.0	-3.9	25.0	23.9	75.0	51.7	125.0	79.4	175.0
-31.1	-24.0	-3.3	26.0	24.4	76.0	52.2	126.0	80.0	176.0
-30.6	-23.0	-2.8	27.0	25.0	77.0	52.8	127.0	80.6	177.0
-30.0	-22.0	-2.2	28.0	25.6	78.0	53.3	128.0	81.1	178.0
-29.4	-21.0	-1.7	29.0	26.1	79.0	53.9	129.0	81.7	179.0
-28.9	-20.0	-1.1	30.0	26.7	80.0	54.4	130.0	82.2	180.0
-28.3	-19.0	-0.6	31.0	27.2	81.0	55.0	131.0	82.8	181.0
-27.8	-18.0	0.0	32.0	27.8	82.0	55.6	132.0	83.3	182.0
-27.2	-17.0	0.6	33.0	28.3	83.0	56.1	133.0	83.9	183.0
-26.7	-16.0	1.1	34.0	28.9	84.0	56.7	134.0	84.4	184.0
-26.1	-15.0	1.7	35.0	29.4	85.0	57.2	135.0	85.0	185.0
-25.6	-14.0	2.2	36.0	30.0	86.0	57.8	136.0	85.6	186.0
-25.0	-13.0	2.8	37.0	30.6	87.0	58.3	137.0	86.1	187.0
-24.4	-12.0	3.3	38.0	31.1	88.0	58.9	138.0	86.7	188.0
-23.9	-11.0	3.9	39.0	31.7	89.0	59.4	139.0	87.2	189.0
-23.3	-10.0	4.4	40.0	32.2	90.0	60.0	140.0	87.8	190.0
-22.8	-9.0	5.0	41.0	32.8	91.0	60.6	141.0	88.3	191.0
-22.2	-8.0	5.6	42.0	33.3	92.0	61.1	142.0	88.9	192.0
-21.7	-7.0	6.1	43.0	33.9	93.0	61.7	143.0	89.4	193.0
-21.1	-6.0	6.7	44.0	34.4	94.0	62.2	144.0	90.0	194.0
-20.6	-5.0	7.2	45.0	35.0	95.0	62.8	145.0	90.6	195.0
-20.0	-4.0	7.8	46.0	35.6	96.0	63.3	146.0	91.1	196.0
-19.4	-3.0	8.3	47.0	36.1	97.0	63.9	147.0	91.7	197.0
-18.9	-2.0	8.9	48.0	36.7	98.0	64.4	148.0	92.2	198.0
-18.3	-1.0	9.4	49.0	37.2	99.0	65.0	149.0	92.8	199.0
-17.8	0.0	10.0	50.0	37.8	100.0	65.6	150.0	93.3	200.0

TEMPERATURE CONVERSION FORMULA

$$^{\circ}\text{C} = \frac{5}{9} (^{\circ}\text{F} - 32)$$

$$^{\circ}\text{F} = \frac{9}{5} ^{\circ}\text{C} + 32$$

Conduit Capacity Chart

Conduit Trade Size	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	
I.D. Inches	0.622	0.824	1.049	1.380	1.610	2.067	2.731	3.356	3.834	4.334	
Internal Area, In ²	0.304	0.533	0.864	1.496	2.036	3.356	5.858	8.846	11.545	14.753	
1 Conductor (53% fill)	0.161	0.283	0.458	0.793	1.079	1.778	3.105	4.688	6.119	7.819	
2 Conductors (31% fill)	0.094	0.165	0.268	0.464	0.631	1.040	1.816	2.742	3.579	4.573	
Conductors (40% fill)	0.122	0.213	0.346	0.598	0.814	1.342	2.343	3.538	4.618	5.901	
Cable OD Inches	Cable Area In ²	Numbers listed below are based on the 2008 NEC (40% fill) for 3 or more non-lead covered cables.									
0.100	0.008	15	26	43	76	104	170	244	375	504	648
0.125	0.012	9	17	27	48	66	109	156	240	322	414
0.150	0.018	6	11	19	33	46	75	108	166	224	288
0.175	0.024	5	8	14	24	34	55	79	122	164	211
0.200	0.031	3	6	10	19	26	42	81	93	126	162
0.225	0.040	3	5	8	15	20	33	48	74	99	128
0.250	0.049	1	4	6	12	16	27	39	60	80	103
0.275	0.059	1	3	5	10	13	22	32	49	66	85
0.300	0.071	1	2	4	8	11	18	27	41	56	72
0.325	0.083	1	1	4	7	9	16	23	35	47	61
0.350	0.096	1	1	3	6	8	13	19	30	41	52
0.375	0.110	1	1	3	5	7	12	17	26	35	46
0.400	0.126	1	1	2	4	6	10	15	23	31	40
0.425	0.142	1	1	1	4	5	9	13	20	27	35
0.450	0.159	1	1	1	3	5	8	12	18	24	32
0.475	0.177	0	1	1	3	4	7	10	17	22	28
0.500	0.196	0	1	1	3	4	6	9	15	20	25
0.525	0.216	0	1	1	2	3	6	8	13	18	23
0.550	0.238	0	1	1	1	3	5	8	12	16	21
0.575	0.260	0	1	1	1	3	5	7	11	15	19
0.600	0.283	0	0	1	1	2	4	6	10	14	18
0.625	0.307	0	0	1	1	2	4	6	9	12	16
0.650	0.332	0	0	1	1	1	4	5	8	11	15
0.675	0.358	0	0	1	1	1	3	5	8	11	14
0.700	0.385	0	0	1	1	1	3	5	7	10	13
0.725	0.413	0	0	1	1	1	3	4	7	9	12
0.750	0.442	0	0	1	1	1	3	4	6	8	11
0.775	0.472	0	0	0	1	1	2	4	6	8	10
0.800	0.503	0	0	0	1	1	2	3	5	7	10
0.825	0.535	0	0	0	1	1	1	3	5	7	9
0.850	0.567	0	0	0	1	1	1	3	5	6	8
0.875	0.601	0	0	0	1	1	1	3	4	6	8
0.900	0.636	0	0	0	1	1	1	3	4	6	8
0.925	0.672	0	0	0	1	1	1	2	4	5	7
0.950	0.709	0	0	0	1	1	1	2	4	5	7
0.975	0.747	0	0	0	1	1	1	1	3	5	6
1.000	0.785	0	0	0	1	1	1	1	3	5	6
1.025	0.825	0	0	0	0	1	1	1	3	4	6
1.050	0.866	0	0	0	0	1	1	1	3	4	5
1.075	0.908	0	0	0	0	1	1	1	3	4	5

Notice: 1. The reader is cautioned to consult the NEC for specific information regarding conduit fill.
 2. This Conduit Capacity Chart should only be used as a guide when attempting to estimate conduit fill.
 3. For additional information, the reader should refer to the National Electrical Code.

AWG Conductor Chart

COPPER CONDUCTOR DATA

The conductors used by Prysmian meet the applicable requirements of ASTM specifications B-3, B-33, B-172, B-173, B-174 and B-286 and Federal Specification QQ-W-343. The following data covers the more commonly used conductor constructions in the electrical and electronics industry. Special constructions, not shown, are available or can be designed to meet specific requirements. It is suggested that the Prysmian Product Engineering Department be contacted before a specification is finalized.

AWG	STRANDING	TYPE STRANDING ⁽¹⁾	DIAMETER ⁽⁴⁾		AREA		WEIGHT		D.C. RESISTANCE 20°C ⁽²⁾				BREAK STR. LBS
			in	mm	circ. mils	sq. mm	lbs/Mft	kg/km	TIN COATING ⁽³⁾		BARE OF SILVER COATING		
									Ω/Mft	Ω/km	Ω/Mft	Ω/km	
32	7/40	Co or Bu	.0096	.254	100	.051	.21	.31	176.00	577.00	164.00	538.00	1.986
30	Solid 7/38	-	.010	.254	100	.051	.30	.45	113.00	371.00	104.00	340.00	3.157
		Bu	.012	.305	112	.057	.35	.52	106.00	348.00	92.60	303.00	
28	Solid 7/36	-	.01264	.321	159	.081	.48	.72	70.80	232.00	65.30	214.00	5.020
		Co	.015	.381	175	.089	.55	.82	67.50	221.00	59.30	194.00	
27	Solid 7/35	-	.0142	.361	202	.102	.61	.91	55.60	182.00	51.40	169.00	6.331
		Co or Bu	.017	.432	220	.111	.69	1.04	53.80	176.00	-	-	
26	Solid 7/34 10/36 19/38	-	.016	.404	253	.128	.77	1.14	44.50	146.00	41.00	135.00	7.983
		Co or Bu	.019	.483	278	.141	.87	1.29	42.50	139.00	37.30	122.00	
		Bu	.0193	.490	250	.127	.78	1.15	47.30	155.00	40.40	133.00	
		Bu or Co	.021	.533	304	.154	.97	1.44	38.90	128.00	34.10	112.00	
24	Solid 7/32 16/36 19/36	-	.0201	.511	404	.205	1.22	1.82	27.20	89.20	25.70	84.20	12.690
		Co or Bu	.024	.610	448	.227	1.38	2.05	25.70	84.20	23.10	75.90	
		Bu	.024	.610	400	.201	1.25	1.64	29.50	96.80	27.50	90.20	
		Co or Bu	.025	.635	475	.241	1.48	2.20	24.90	81.70	21.80	71.60	
22	Solid 7/30 19/34	-	.025	.643	643	.324	1.94	2.89	16.70	54.80	16.20	53.20	19.430
		Co or Bu	.030	.762	700	.355	2.19	3.26	16.60	54.40	14.80	48.60	
		Bu or Eq	.0315	.800	754	.382	2.35	3.50	15.50	50.80	13.80	45.10	
20	Solid 7/28 10/30 19/32 26/34	-	.032	.813	1,020	.519	3.10	4.61	10.50	34.40	10.10	33.20	30.890
		Co or Bu	.038	.965	1,111	.562	3.49	5.19	10.30	33.80	9.33	30.60	
		Bu	.037	.940	1,111	.507	3.14	4.67	11.40	37.40	10.40	34.00	
		Co, Bu or Eq	.040	1.02	1,000	.616	3.84	5.71	9.48	31.10	8.53	28.00	
		Bu	.039	.940	1,216	.523	3.28	4.88	11.30	37.10	-	-	
19	Solid	-	.0359	.912	1,032	.653	3.90	5.80	-	-	8.05	26.40	38.950
18	Solid 7/26 16/30 19/30 41/34	-	.0403	1.024	1,290	.823	4.92	7.32	6.77	22.20	6.39	21.00	49.120
		Co or Bu	.048	1.22	1,620	.897	5.55	8.26	6.45	21.20	5.55	19.20	
		Bu	.0475	1.207	1,770	.810	5.01	7.45	7.15	23.40	6.48	21.30	
		Co, Bu or Eq	.050	1.27	1,600	.963	5.95	8.85	6.10	20.00	5.46	17.90	
		Bu	.049	1.244	1,900	.824	5.09	7.08	7.08	23.20	6.60	21.60	
16	Solid 19/29 19/0117 26/30 65/34	-	.0508	1.29	1,627	1.31	7.81	11.60	4.47	14.70	4.16	13.60	78.100
		Bu or Eq	.057	1.45	2,580	1.23	7.52	11.20	4.82	15.80	4.27	14.00	
		Bu	.0585	1.50	2,426	1.32	8.02	11.90	4.39	14.40	4.13	13.50	
		Bu	.0606	1.54	2,601	1.32	8.15	12.10	4.39	14.40	3.99	13.10	
		Bu	.060	1.52	2,600	1.31	8.20	11.90	4.47	14.70	4.16	13.60	
14	Solid 7/0242 19/27 19/0147 41/30	-	.0641	1.63	2,581	2.08	12.4	18.50	2.68	8.79	2.52	8.28	124.200
		Co	.073	1.85	4,110	2.08	12.7	18.90	-	-	2.61	8.56	
		Co, Eq or Un	.071	1.80	4,100	1.94	12.1	18.00	3.05	10.00	2.71	8.88	
		Bu	.074	1.88	3,831	2.08	12.7	18.90	2.73	-	2.61	8.56	
		Bu	.077	1.96	4,106	2.08	12.9	19.20	2.81	9.22	2.53	8.30	
12	Solid 7/0305 19/25 19/0185 65/30	-	.0808	2.05	4,100	3.31	19.8	29.50	1.69	5.54	1.59	5.21	197.500
		Bu	.092	2.34	6,530	3.30	20.2	30.10	-	-	1.64	5.38	
		Co, Eq or Un	.0905	2.299	6,512	3.08	19.4	28.90	1.87	6.13	1.70	5.59	
		Cu	.0925	2.35	6,088	3.30	20.2	30.10	-	-	1.64	5.25	
		Bu	.094	2.388	6,503	3.29	20.8	31.10	1.82	5.97	1.64	5.25	
10	Solid 7/0385 19/0234 37/0169 105/30	-	.1019	2.588	6,500	5.26	31.4	46.80	-	-	1.00	3.28	314.500
		Co	.116	2.95	10,380	5.25	32.0	47.60	-	-	1.00	3.28	
		Bu	.117	2.97	10,376	5.27	32.0	47.60	-	-	.98	3.21	
		Co	.112	2.84	10,404	4.74	29.2	43.40	-	-	1.25	4.10	
		Bu	.126	3.20	9,361	5.32	33.8	49.20	1.10	3.61	.99	3.24	
8	7/0486 19/0295 133/29 168/30	Bu	.146	3.71	10,500	8.38	50.1	74.50	-	-	.65	2.13	
		Bu or Eq	.144	3.66	16,534	8.38	50.0	74.40	-	-	.65	2.13	
		Ro 19 x 7/29	.169	4.293	16,535	8.61	54.0	80.40	.71	2.33	-	-	
		Ro 7 x 24/30	.174	4.42	16,983	8.51	53.4	79.00	.70	2.30	-	-	
6	19/0374 133/27 266/30	Bu	.188	4.775	16,800	13.33	81.1	121.00	-	-	.40	1.30	
		Ro 19 x 7/27	.213	5.41	26,576	13.60	84.1	125.00	.43	1.41	-	-	
		Ro 7 x 38/30	.222	5.64	26,818	13.49	83.2	124.00	.44	1.44	-	-	
4	133/25 420/30	Ro 19 x 7/25	.257	6.53	26,600	21.61	135.0	201.00	.29	.95	-	-	
		Ro 7 x 60/30	.270	6.850	42,615	21.29	140.0	208.00	.28	.92	-	-	
2	665/30	Ro 19 x 35/30	.338	8.59	42,000	33.72	213.0	317.00	.18	.59	-	-	

(1) Bu - Bunched; Co - Concentric; Eq - Equilay; Ro - Rope; Un - Unilay
 (2) Typical DC resistance values for uninsulated wires. Multiply by 1.04 for typical values after insulation
 (3) Values are for tinned, heavy tinned, prefused, overcoated or topcoated conductors
 (4) Does not meet UL conductor stranding requirements

Glossary

- Abrasion Resistance:** Resistance to surface wear.
- AC Alternating Current (a.c.):** Current in which the charge-flow periodically reverses and is represented by: $I = I_g \cos(2\pi f + \phi)$ where, I is the current, I_g is the amplitude, f the frequency, ϕ the phase angle.
- Accelerated Aging:** A test that attempts to duplicate long-time environmental aging in comparatively short time spans.
- Accelerator:** A chemical additive which hastens a chemical reaction under specific conditions.
- Accordion:** (1) A retractile cable with a series of equally-spaced transverse folds. (2) A connector contact with a "Z" shaped flat spring to permit high deflection without overstress.
- Adapter:** A device that enables any or all of the following 1) different sizes or types of plugs to mate with one another or to fit into a telecommunications outlet/connector; 2) the rearrangement of leads; 3) large cables with numerous wires to fan out into smaller groups of wires, 4) interconnection between cables.
- Adhesive Bonded:** Cables bonded by adding an adhesive coating to the surface of the cable components, then joining and curing the adhesive to form a cable. See Bonded Cable.
- Administration:** The method for labeling, identification, documentation and usage needed to implement moves, additions and changes of the telecommunications infrastructure.
- Admittance:** The measure of the ease with which an alternating current flows in a circuit. The reciprocal of impedance.
- Aerial Cable:** A cable suspended in the air on poles or other overhead structure.
- Aging:** The change in properties of a material with time under specific conditions.
- Air Core Cable:** A cable in which the interstices in the cable core are not filled with a moisture barrier.
- Air-Handling Plenum:** A designated area, closed or open, used for environmental air.
- Air Spaced Coaxial Cable:** One in which air is essentially the dielectric material. A spirally wound synthetic filament, beads or braided filaments may be used to center the conductor.
- All-Rubber Cable:** A cable in which all interstices between conductors are filled with rubber compound.
- Alligator Clip:** A mechanical device shaped like alligator jaws used as a temporary connection on the end of interconnections wire.
- Alloy:** A metal formed by combining two or more different metals to obtain desirable properties.
- Aluminum Conductor:** An aluminum wire or group of wires not suitably insulated to carry electrical current.
- Aluminum-Steel Conductor:** A composite conductor made up of a combination of aluminum and steel wires.
- Ambient Temperature:** The temperature of a medium (gas or liquid) surrounding an object.
- American Wire Gauge (AWG):** The standard system used for designating wire diameter. The lower the AWG number, the larger the diameter. Also called the Brown and Sharpe (B&S) wire gauges.
- Ampacity:** See Current Carrying Capacity.
- Ampere:** The unit of current. One ampere is the current flowing through one ohm of resistance at one volt potential.
- Analog:** A signaling format that uses continuous physical variables such as voltage amplitude or frequency variations to transmit information.
- Anneal:** Relief of mechanical stress through heat and gradual cooling. Annealing copper renders it less brittle.
- Annular Conductor:** A number of wires stranded in three reversed concentric layers around a core.
- Annunciator:** A signaling device, usually electrically operated, that gives an audible or visual signal (or both) when energized.
- Anti-Oxidant:** A substance which prevents or slows down oxidation of material exposed to air.
- Appliance Wire and Cable:** A classification covering insulated wire and cable for internal wiring of appliances and equipment.
- Arc Resistance:** The time required for an arc to establish a conductive path in a material.
- Armored Cable:** A cable provided with a wrapping of metal for mechanical protection.
- Attenuation:** The decrease in magnitude of the power of a signal in transmission between points. Attenuation is usually measured in decibels per unit length at a specific frequency.
- Attenuation to Crosstalk Ratio (ACR):** The difference between attenuation and crosstalk, measured in dB, at a given frequency. Important characteristic in networking transmission to assure that signal sent down a twisted pair is stronger at the receiving end, after being attenuated, than are any interference signals imposed on that same pair by crosstalk from other pairs, represented by NEXT.
- Audio Frequency:** The range of frequencies audible to the human ear. Usually 20-20,000 Hz.
- Backbone:** A facility (e.g. pathway, cable or conductors) between telecommunications closets or floor distribution terminals, the entrance facilities and the equipment rooms within or between buildings.
- Backbone Cable or Wire:** Cable or wire found in the backbone; see Backbone.
- Balanced Line:** A cable having two identical conductors which carry voltages opposite in polarity and equal in magnitude with respect to ground.
- Balun:** A device for matching an unbalanced coaxial transmission line to a balanced two-wire system.
- Band Marking:** A continuous circumferential band applied to a conductor at regular intervals for identification.
- Banded Cable:** Two or more cables banded together by stainless steel strapping.
- Bandwidth:** A continuous range of frequencies extending between two limiting frequencies. Also referred to as a frequency band.
- Barrel-Packed:** Method of coiling into a fiber drum for shipment.
- Baseband:** In data transmission, the use of a dedicated end-to-end connection to carry a single channel only.
- Beaded Coax:** Coaxial cable with a dielectric consisting of beads made of various materials.
- Belt:** Number of layers of insulation on a conductor, or number of layers of jacket on a cable.
- Belted-Type Cable:** Multiple conductor cable having a layer of insulation over the assembled insulated conductors.
- Bend Loss:** A form of increased attenuation caused by (1) having an optical fiber curved around a restrictive radius of curvature or (2) microbends caused by minute distortions in the fiber imposed by externally induced forces.
- Bend Radius:** Radius of curvature that a fiber optic or metallic cable can bend without any adverse effects.
- Bifilar:** A winding made non-inductive by winding together (as one wire) two wires carrying current in opposite directions.
- Billion Conductor Feet (BCF):** A quantity derived by multiplying the number of conductors in a cable by the amount of cable. Usually used to indicate plant capacity or an annual requirement.
- Bimetallic Wire:** A wire formed of two different metals joined together (not alloyed). It can include wire with a steel core clad wire, or plated or coated wire.
- Binder:** A spirally served tape or thread used for holding assembled cable components in place awaiting subsequent manufacturing operations.
- Binding Post:** A device for clamping or holding electrical conductors in a rigid position.
- Bit:** One binary (0 or 1) digit.
- Blown Jacket:** Outer cable covering applied by controlled inflation of the cured jacket tube then pulling the cable through it.
- Bond Strength:** Amount of adhesion between bonded surfaces, e.g. in cemented ribbon cable.
- Bondable Wire:** An insulated wire treated to facilitate adherence to materials such as potting compounds. Also, magnet wires used in making coils when bonding the turns together is desired.
- Bonded Cable:** Cable consisting of pre-insulated conductors or multiconductor components laid-in parallel and bonded into a flat cable. See Solvent-Bonded; Adhesive-Bonded; Film-Bonded.
- Bonded Construction:** An insulation construction in which the glass braid and nylon jacket are bonded together.
- Bonding:** The permanent joining of metallic parts to form an electrically conductive path that will assure electrical continuity and the capacity to conduct safely any current likely to be imposed on it.
- Booster:** A device inserted into a line (or cable) to increase the voltage.
- Boot:** (1) Protective covering over a cable, wire or connector in addition to the normal jacketing or insulation. (2) A form placed around wire termination of a multiple-contact connector to contain the liquid potting compound before it hardens.
- Braid:** A fibrous or metallic group of filaments interwoven in cylindrical form to form a covering over one or more wires.
- Braid Angle:** The smaller of the two angles formed by the shielding strand and in the axis of the cable being shielded.
- Braid Carrier:** A spool or bobbin on a braid which holds one group of strands or filaments consisting of a specific number of ends. The carrier revolves during braiding operations.
- Braid Ends:** The number of strands used to make up one carrier. The strands are wound side by side on the carrier bobbin and lie parallel in the finished braid.

Glossary

- Braiding Machine:** Machine used to apply braids to wire and cable and to produce braided sleeving and braids for tying or lacing purposes. Braiding machines are identified by the number of carriers.
- Breakdown (Puncture):** A disruptive discharge through the insulation.
- Breakdown Voltage:** The voltage at which the insulation between two conductors breaks down.
- Breakout:** The point at which a conductor or group of conductors breaks out from a multiconductor cable to complete circuits at various points along the main cable.
- Bridge:** A device used to expand a local area network by forwarding frames between data link layers.
- Bridged Tap:** The multiple appearances of the same cable pair at several distribution points.
- British Standard Wire Gauge:** A modification of the Birmingham Wire Gauge and the legal standard of Great Britain for all wires. Also known as Standard Wire Gauge (SWG), New British Standard (NBS), English Legal Standard and Imperial Wire Guide.
- Broadband:** In data transmission, the use of a carrier signal, rather than direct modulation, to carry several simultaneous channels.
- Buffer:** (fiber optic) A soft material which mechanically isolates individual fibers in a fiber optic cable or bundle from small geometrical irregularities, distortions or roughness of adjacent surfaces.
- Buffing Stripper:** A motorized device for removing flat cable insulation by means of buffing wheels that melt the insulation and brush it away from the conductors. Also called Abrasion Stripper.
- Building Entrance Area:** See Entrance Room or Space, Telecommunications.
- Building Wire:** Wire used for light and power, 600 volts or less, usually not exposed to outdoor environment.
- Bunched Stranding:** A group of strands twisted together in a random manner and the same direction without regard to geometric arrangement of specific strands.
- Buncher:** A machine that twists wires together in random arrangement.
- Bundle:** (fiber optic) A number of fibers grouped together, usually carrying a common signal.
- Buried Cable:** A cable installed directly in the earth without use of underground conduit. Also called "direct burial cable."
- Bus:** Wire used to connect two terminals inside of an electrical unit.
- Bushing:** A mechanical device used as a lining for an opening to prevent abrasion to wire and cable.
- Butt:** Joining of two conductors end-to-end, with no overlap and with the axes in line.
- Butt Splice:** A splice wherein two wires from opposite ends butt against each other, or against a stop, in the center of a splice.
- Butt Wrap:** Tape wrapped around an object or conductor in an edge-to-edge condition.
- Byte:** Typically a group of eight binary digits.
- Cable:** A stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors (multiple-conductor cable). In fiber optics, a jacketed fiber or jacketed bundle in a form which can be terminated.
- Cable Assembly:** Typically, the cable and associated connectors; ready to install.
- Cable Clamp:** A device used to give mechanical support to the wire bundle or cable at the rear of a plug or receptacle.
- Cable Clamp Adapter:** A mechanical adapter that attaches to the rear of a plug or receptacle to allow the attachment of a cable clamp.
- Cable Core:** The portion of an insulated cable lying under a protective covering.
- Cable Core Binder:** A wrapping of tapes or cords around the conductors of a multiple-conductor cable used to hold them together.
- Cable Filler:** The material used in multiple-conductor cables to occupy the interslices formed by the assembly of the insulated conductors, thus forming a cable core.
- Cable Rack:** The vertical or horizontal open support (usually made of aluminum or steel) that is attached to a ceiling or wall.
- Cable Sheath:** The overall protective covering applied to cables.
- Cable Tray:** A ladder, trough, solid-bottom or channel raceway system intended for, but not limited to, the support of telecommunications media (e.g., cable).
- Cable Vulcanizer:** Compression molding machine used to repair cable jacketing that has had a part removed for splicing, for adding connectors or other devices or for replacing damaged sections.
- Cabling:** (1) A combination of all cables, wire, cords and connecting hardware. (2) Twisting together two or more insulated conductors by machine to form a cable. In fiber optics, a method by which a group or bundle of fibers is mechanically assembled.
- Cabling Factor:** Used in the formula for calculating the diameter of an unshielded, unjacketed cable. $D = Kd$, where D is the cable diameter, K is the factor and d is the diameter of one insulated conductor.
- Campus:** The building and grounds of a complex (e.g. a university, college, industrial park or military establishment).
- Canadian Standards Association (CSA):** A non-profit independent organization which operates a listing service for electrical and electronic materials and equipment. The Canadian counterpart of the Underwriter's Laboratories.
- Capacitance:** The ratio of the electrostatic charge on a conductor to the potential difference between the conductors required to maintain that charge.
- Capacitance, Direct:** The capacitance measured from one conductor to another conductor through a single insulating layer.
- Capacitance, Mutual:** The capacitance between two conductors (typically of a pair) with all other conductors, including shield, short circuited to ground.
- Carolprene®:** Proprietary rubber compound.
- Carrier:** The woven element of a braid consisting of one or more ends (strands) which creates the interlaced effect. Also, a spindle, spool, tube, or bobbin (on a braiding machine) containing yarn or wire, employed as a braid.
- Cellular Plastics:** Expanded or "foam," consists of individual closed cells of inert gas suspended in a plastic medium, resulting in a desirable reduction of the dielectric constant.
- Central Office:** The place where communications common carriers terminate customer lines and locate switching equipment that interconnects those lines.
- Certificate of Compliance (C of C):** A written statement; normally generated by a quality control department, which states that the product being shipped meets customer's specifications.
- Certified Test Report (CTR):** A report reflecting actual test data on the cable shipped. Tests are normally conducted by the quality control department, and show that the product being shipped meets the required test specifications.
- Characteristic Impedance:** The impedance that, when connected to the output terminals of a transmission line of any length, makes the line appear indefinitely long.
- Chlorosulfonated Polyethylene (CSPE):** A rubbery polymer used for insulations and jackets. Manufactured by E.I. DuPont under the trade name of Hypalon®.
- Cigarette Wrap:** Tape insulation wrapped longitudinally instead of spirally over a conductor.
- Circuit:** A complete path over which electrons can flow from the negative terminals of a voltage source through parts and wires to the positive terminals of the same voltage source.
- Circuit Sizes:** A popular term for building wire sizes 14 through 10 AWG.
- Circular Mil:** The area of a circle one mil (.001") in diameter; 7.854×10^{-7} sq. in. Used in expressing wire cross sectional area.
- Cladding:** Method of applying a layer of metal over another metal whereby the junction of the two metals is continuously welded. In fiber optics, a sheathing intimately in contact with the core of a higher refractive index material which serves to provide optical insulation and protection to the reflection interface.
- Closed End Splice:** An insulated splice in which two or more wires overlap and enter the splice from the same end of the barrel.
- Closet, Telecommunications:** An enclosed space for housing telecommunications equipment, cable terminations and cross-connect cabling. The closet is the recognized location of the cross-connect between the backbone and horizontal facilities.
- Coaxial Cable:** A cable consisting of two cylindrical conductors with a common axis, separated by a dielectric.
- Coaxial Connector:** A connector that has a coaxial construction and is used with coaxial cable.
- Coherent Source:** (fiber optic) A light source which emits a very narrow, unidirectional beam of light of one wavelength (monochromatic).
- Coil Effect:** The inductive effect exhibited by a spiral-wrapped shield, especially above audio frequencies.
- Cold Flow:** Permanent deformation of the insulation due to mechanical force of pressure (not due to heat softening).
- Color Code:** A color system for wire or circuit identification by use of solid colors, tracers, braids, surface printing, etc.
- Commercial Building:** A building or portion thereof, that is intended for office use.

Glossary

- Common Axis Cabling:** In multiple cable constructions, a twisting of all conductors about a "common axis" to result in smaller diameter constructions. Tends to result in greater susceptance to electromagnetic and electrostatic interference.
- Compact Conductor:** Stranded conductor rolled to deform the round wires to fill the normal interstices between the wires in a strand.
- Composite (Clad) Wire:** A wire having a core of one metal with a fused outer shell of different metals.
- Composite Conductor:** Two or more strands of different metals assembled and operated in parallel.
- Compound:** An insulating or jacketing material made by mixing two or more ingredients.
- Compression Cable:** A pipe type cable in which the pressure medium is separated from the insulation by a membrane or sheath.
- Concentric:** A central core surrounded by one or more layers of helically wound strands in a fixed round geometric arrangement.
- Concentric-Lay Cable:** A concentric-lay conductor, or a multiple-conductor cable composed of a central core surrounded by one or more layers of helically laid insulated conductors.
- Concentric Strand:** A strand that consists of a central wire or core surrounded by one or more layers of spirally laid wires.
- Concentricity:** The measurement of the location of the center of the conductor with respect to the geometric center of the circular insulation.
- Conductance:** The ability of a conductor to carry an electric charge. The ratio of the current flow to the potential difference causing the flow. The reciprocal of resistance.
- Conductivity:** The capacity of a material to carry electrical current—usually expressed as a percentage of copper conductivity (copper being 100%).
- Conductor:** A wire (or combination of wires not insulated from one another) suitable for carrying electric current.
- Conduit:** A rigid or flexible metallic or nonmetallic raceway of circular cross-section through which cables can be pulled or housed.
- Connecting Hardware:** A device providing mechanical cable terminations.
- Connector:** A device used to provide rapid connect/disconnect service for electrical cable and wire terminations.
- Contact:** The part of a connector which actually carries the electrical current, and are touched together or separated to control the flow.
- Contact Inspection Hole:** A hole in the cylindrical rear portion of contact used to check the depth to which a wire has been inserted.
- Contact Size:** The largest size wire which can be used with the specific contact. Also, the diameter of the engagement end of the pin.
- Continuity Check:** A test to determine whether electrical current flows continuously throughout the length of a single wire or individual wires in a cable.
- Continuous Vulcanization:** Simultaneous extrusion and vulcanization of rubber-like wire coating materials.
- Contra-helical:** Cable spiralling in an opposite direction than the preceding layer within a wire or cable.
- Control Cable:** A multi-conductor cable made for operation in control of signal circuits.
- Controlled Impedance Cable:** Package of two or more insulated conductors where impedance measurements between respective conductors are kept essentially constant throughout the entire length.
- Copolymer:** A compound resulting from the polymerization of two different monomers.
- Copper-Clad:** Steel with a coating of copper welded to it before drawing as opposed to copper-plated. Synonymous with Copperweld.
- Copperweld:** The trade name of Flexo Wire Division (Copperweld Steel Corp.) for their copper-clad steel conductors.
- Cord:** A small, flexible insulated cable.
- Cord Set:** Portable cords fitted with a wiring device at one or both ends.
- Cord, Telecommunications:** A cable using stranded conductors for flexibility, as in distribution cords or line cords. Line cords can also use tinsel conductors.
- Core:** In cables, a component or assembly of components over which other materials are applied, such as additional components, shield, sheath or armor. In fiber optics, the transparent glass or plastic section with a high refractive index through which the light travels by internal reflections.
- Corona:** A discharge due to ionization of air around a conductor due to a potential gradient exceeding a certain critical value.
- Corona Resistance:** The time that the insulation will withstand a specified level of field-intensified ionization that does not result in the immediate complete breakdown of the insulation.
- Corrosion:** The destruction of the surface of a metal by chemical reaction.
- Coupling Loss:** (fiber optic) Signal losses due to small differences in numerical aperture, core diameter, core concentricity and tolerances in splicing connectors when two fibers are aligned. Also known as Splicing Loss and Transfer Loss.
- Coupling Ring:** A device used on cylindrical connectors to lock plug and receptacle together.
- Coverage:** The calculated percentage which defines the completeness with which a metal braid covers the underlying surface. The higher percentage of coverage, the greater the protection against external interference.
- Covering:** Textile braid or jacket of rubber, plastics or other materials applied over wire and cables to provide mechanical protection and identification.
- Crazing:** The minute cracks on the surface of plastic materials.
- Creep:** The dimensional change with time of a material under load.
- Creepage:** The conduction of electricity across the surface of a dielectric.
- Creepage Path:** The path across the surface of a dielectric between two conductors.
- Creepage Surface:** An insulating surface which provides physical separation as a form of insulation between two electrical conductors of different potential.
- Crimp:** Act of compressing a connector barrel around a cable in order to make an electrical connection.
- Crimp Termination:** Connection in which a metal sleeve is secured to a conductor by mechanically crimping the sleeve with pliers, presses or automated crimping machines.
- Cross-Connect:** A facility enabling the termination of cable elements and their interconnection, and/or cross-connection, primarily by means of a patch cord or jumper.
- Cross-Linked:** Inter-molecular bonds between long-chain thermoplastic polymers by chemical or electron bombardment means. The properties of the resulting thermosetting material are usually improved.
- Crosstalk:** Undesired electrical currents in conductors caused by electromagnetic or electrostatic coupling from other conductors or from external sources. Also, leakage of optical power from one optical conductor to another.
- CSA:** Canadian Standards Association.
- C-SJ:** Same as SJ except extra-flexible conductor.
- C-SJO:** Same as SJO except extra-flexible conductor.
- Cure:** To change the physical properties of a material by chemical reaction.
- Curing Cycle:** The time, temperature and pressure required for curing.
- Curl:** The degree to which a wire tends to form a circle after removal from a spool. An indication of the ability of the wire to be wrapped around posts in long runs.
- Current:** The rate of transfer of electricity. Practical unit is the ampere which represents the transfer of one coulomb per second. In a simple circuit, current (I) produced by a cell or electromotive force (E) when there is an external resistance (R) and internal resistance (r) is:

$$I = \frac{E}{R+r}$$
- Current Carrying Capacity:** The maximum current an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations.
- Customer Premises:** Building(s) with grounds and appurtenances (belongings) under the control of the customer.
- Cut-Through Resistance:** The ability of a material to withstand mechanical pressure, usually a sharp edge or small radius, without separation.
- Cycle:** The complete sequence including reversal of the flow of an alternating electric current.
- Decibel (dB):** A unit to express differences of power level. Used to express power gain in amplifiers or power loss in passive circuits or cables.
- Delay Line:** A cable made to provide very low velocity of propagation with long electrical delay for transmitted signals.
- Demarcation Point:** A point where the operational control or ownership changes.
- Depth of Crimp:** Thickness of the crimped portion of a connector measured between two opposite points on the crimped surface.
- Derating Factor:** A factor used to reduce the current carrying capacity of a wire when used in environments other than that for which the value was established.
- Detector:** (fiber optic) A device that picks up light from fiber and converts the information into an electrical signal.
- Device, As Related to a Work Station:** An item such as a telephone, personal computer or graphic or video terminal.

Glossary

- Device, As Related to Protection:** A protector, a protector mount, a protector unit or a protector module.
- Dielectric:** An insulating medium which intervenes between two conductors and permits electrostatic attraction and repulsion to take place across it.
- Dielectric Breakdown:** The voltage required to cause an electrical failure or breakthrough of the insulation.
- Dielectric Constant (K):** The ratio of the capacitance of a condenser with dielectric between the electrodes to the capacitance when air is between the electrodes. Also called Permittivity and Specific Inductive Capacity.
- Dielectric Loss:** Power dissipated in an insulating medium as the result of the friction caused by molecular motion when an AC electric field is applied.
- Dielectric Strength:** The voltage which an insulation can withstand before breakdown occurs. Usually expressed as a voltage gradient (such as volts per mil).
- Dielectric Test:** A test in which a voltage higher than the rated voltage is applied for a specified time to determine the adequacy of the insulation under normal conditions.
- Digital:** Transmission data representative by discrete characters.
- Dip Coating:** An insulating coating applied to the conductor by passing the conductor through an applicator containing liquid insulating medium.
- Direct Burial Cable:** A cable installed directly in the earth.
- Direct Capacitance:** The capacitance measured directly from conductor to conductor through a single insulating layer.
- Direct Current (d.c.):** An electric current which flows in only one direction.
- Direct Current Resistance (DCR):** The resistance offered by any circuit to the flow of direct current.
- Direction of Lay:** The lateral direction in which the strands of a conductor run over the top of the cable conductor as they recede from an observer looking along the axis of the conductor or cable. Also applies to twisted cable.
- Discrete Wiring:** Wire or wires having distinct identity and purpose.
- Dispersion:** (fiber optic) The variation of the refractive index of a material with wavelength, causing light of different wavelengths to travel at different velocities in the material.
- Disruptive Discharge:** A sudden, large increase in current through an insulation medium due to the complete failure of the medium under the electrostatic stress.
- Dissipation Factor:** The tangent of the loss angle of the insulating material. (Also referred to as loss tangent, $\tan \delta$, and approximate power factor.)
- Distribution Cable:** In telecommunications and CATV systems, the transmission cable between the distribution amplifier and the drop wire.
- Distribution Frame:** A structure with terminations for connecting the permanent cabling of a facility in such a manner that interconnection or cross-connections may be readily made.
- Disturbed Conductor:** A conductor that receives energy generated by the field of another conductor or an external source such as a transformer.
- Drain Wire:** In a cable, the uninsulated wire laid over the component or components and used as a ground connection.
- Draw Feed Stock:** Rod or wire that is subsequently drawn to a smaller size.
- Drawing:** In wire manufacture, pulling the metal through a die or series of dies to reduce diameter to a specified size.
- Drop Ceiling:** See False Ceiling.
- Drop Wire:** In telecommunications and CATV systems, the transmission cable from the distribution cable to a dwelling.
- Dual Coaxial Cable:** Two individually insulated conductors laid parallel or twisted and placed within an overall shield and sheath.
- Duct:** 1) A single enclosed raceway for wires or cables. See also Conduit, Raceway; 2) a single enclosed raceway for wires or cables usually used in soil or concrete, 3) an enclosure in which air is moved. Generally part of the HVAC system of a building.
- Duplex:** Two way data transmission on a four-wire transmission line or two fiber.
- Duplex Cable:** (1) A cable composed of two insulated single-conductor cables twisted together. (2) A cable composed of two fibers, typically 62.5/125 mm multimode, placed in parallel under a thermoplastic sheath.
- Duplex Parallel:** Typically used in the thermocouple industry to denote two parallel conductors of dissimilar metals insulated in parallel without twist and jacketed. Commonly applied to thermocouple grades and extension wires.
- Eccentricity:** Like concentricity, a measure of the center of a conductor's location with respect to the circular cross section of the insulation. Expressed as a percentage of displacement of one circle within the other.
- Eddy Current:** Circulating currents induced in conducting materials by varying magnetic fields.
- Elastomer:** A rubber or rubber-like material which will stretch repeatedly to 200 percent or more and return rapidly and with force to its approximate original shape.
- Electro-Tinned:** Electrolytic process of tinning wire using pure tin.
- Electrode:** A conductor through which a current enters or leaves a nonmetallic conductor.
- Electromagnetic Coupling:** Energy transfer by means of a varying magnetic field.
- Electromagnetic Field:** A rapidly moving electric field and its associated moving magnetic field.
- Electromagnetic Induction:** The production of a voltage in a coil due to a change in the number of magnetic lines of forces (flux linkages) passing through the coil.
- Electromagnetic Interference (EMI):** The interference in signal transmission or reception resulting from the radiation of electrical and magnetic fields. Synonym: Radio Frequency Interference.
- Electromotive Force (e.m.f.):** Pressure or voltage. The forces which cause current to flow in a circuit.
- Electronic Wire and Cable:** A length of conductive or semiconductive material used in an electronic application.
- Electrostatic:** Pertaining to static electricity, or electricity at rest. An electric charge, for example.
- Elongation:** The fractional increase in the length of a material stressed in tension.
- Embossing:** A marker identification by means of thermal indentation leaving raised lettering on the sheath material of cable.
- Emergency Overload:** Load which occurs when larger than normal currents are carried through a cable or wire over a certain period of time.
- Enameled Wire:** A conductor with a baked-on enamel film insulation. In addition to magnet wire, enameled insulation is used on thermocouple type wires and other wires.
- Ends:** In braiding, the number of essentially parallel wires of threads on a carrier.
- Energize:** To apply rated voltage to a circuit or device in order to activate it.
- Entrance Facility, Telecommunications:** An entrance to a building for both public and private network service cables (including antennae) including the entrance point at the building wall and continuing to the entrance room or space.
- Entrance Point, Telecommunications:** The point of emergence of telecommunications conductors through an exterior wall, a concrete floor slab or from a rigid metal conduit or intermediate metal conduit.
- Entrance Room or Space, Telecommunications:** A space in which the joining of inter- or intra-building telecommunications backbone facilities takes place. An entrance room may also serve as an equipment room.
- Equilay:** More than one layer of helically laid wires with the direction of lay reversed for successive layers, but with the length of lay the same for each layer.
- Equipment Room, Telecommunications:** A centralized space for telecommunications equipment that serves the occupants of the building. An equipment room is considered distinct from a telecommunications closet because of the nature of complexity or the equipment.
- Etched Wire:** A process applied to fluoroplastic wire in which the wire is passed through a sodium bath to create a rough surface to allow epoxy resin to bond the fluoroplastic.
- Exit Angle:** The angle between the output radiation vectors and the axis of the fiber or fiber bundle.
- External Interference:** The effects of electrical waves or fields which cause sounds other than the desired signal. Static.
- External Wiring:** Electronic wiring which interconnects subsystems within the system.
- Extruded Cable:** Cable with conductors which are uniformly insulated and formed by applying a homogeneous insulation material in a continuous extrusion process.
- Extrusion:** Method of continuously forcing plastic, rubber, or elastomer material through an orifice to apply insulation or jacketing over a conductor or cable core.
- False Ceiling:** A ceiling that creates an area or space between the ceiling material and the structure above the material. Synonym: Drop Ceiling, Suspended Ceiling.
- Farad:** A unit of electrical capacity.
- Fatigue Resistance:** Resistance to metal crystallization which leads to conductors or wires breaking from flexing.
- Feed-Through Insulators:** Insulators that carry a metal conductor through the chassis while preventing the "hot" lead from shorting to the ground chassis.

Glossary

- Feedback:** Energy that is extracted from a high-level point in a circuit and applied to a lower level. Positive feedback reduces the stability of a device and is used to increase the sensitivity or produce oscillation in a system. Negative feedback, also called inverse feedback, increases the stability of a system as the feedback improves stability and fidelity.
- Feeder Cable:** In telecommunication or CATV systems, the transmission cable from the head end (signal pickup) to the trunk amplifier. Also called a trunk cable.
- Feedthrough:** (1) A conductor that connects patterns on opposite sides of a PCB. Also called Interfacial connection. (2) A connector or terminal block, usually having double-ended terminals which permit simple distribution and bussing of electrical circuits.
- Ferrous:** Composed of and/or containing iron. A ferrous metal exhibits magnetic characteristics.
- Ferrule:** A short tube used to make solderless connections to shielded or coaxial cable.
- Fiber:** A thread or threadlike structure. Also, a single discrete element used to transmit optical (light wave) information.
- Fiber Dispersion:** (fiber optic) Pulse spreading in a fiber caused by differing transit times of various modes.
- Fiber Optics:** A lightwave or optical communications system in which electrical information is converted to light energy, transmitted to another location through optical fibers, and is there converted back into electrical information.
- Fiber Tubing:** A loose, crush-resistant cylinder applied over individual fibers to provide mechanical protection.
- Field:** An area of influence around a magnet or electric charge.
- Field Coil:** A suitable insulated winding to be mounted on a field pole to magnetize it.
- Figure 8 Cable:** An aerial cable configuration in which the conductors and the steel strand which supports the cable are integrally jacketed. A cross-section of the finished cable approximates the figure "eight."
- Filament:** Fiber characterized by extreme length.
- Filled Cable:** A telephone cable construction in which the cable core is filled with a material that will prevent moisture from entering or passing through the cable.
- Filler:** (1) A material used in multiconductor cables to occupy large interstices formed by the assembled conductors. (2) An inert substance added to a compound to improve properties or decrease cost.
- Film:** A thin plastic sheet.
- Fine Stranded Wire:** Stranded wire with component strands of 36 AWG or smaller.
- Firestop:** A material, device or assembly of parts installed in a cable system in a fire-rated wall or floor to prevent passage of flame, smoke or gasses through the rated barrier.
- Flame Resistance:** The ability of a material not to propagate flame once the heat source is removed.
- Flammability:** The measure of the material's ability to support combustion.
- Flashover:** A disruptive discharge around or over the surface of a solid or liquid insulator.
- Flat Braid:** A woven braid of tinned copper strands rolled flat at time of manufacture to a specified width.
- Flat Cable:** A cable with two smooth or corrugated but essentially flat surfaces.
- Flat Conductor:** A wire having a rectangular cross-section as opposed to a round or square conductor.
- Flat Conductor Cable:** A cable with a plurality of flat conductors.
- Flexfoil®:** Proprietary aluminum laminated shielding tapes.
- Flex Life:** The measurement of the ability of a conductor or cable to withstand repeated bending.
- Flexibility:** The ease with which a cable may be bent.
- Flexible:** That quality of a cable or cable component which allows for bending under the influence of outside force, as opposed to limpness which is bending due to the cable's own weight.
- Floating:** Referring to a circuit which has no connection to ground.
- Flux:** (1) The lines of force which make up an electrostatic field. (2) The rate of flow of energy across or through a surface. (3) A substance used to promote or facilitate fusion.
- FNC:** Federal Networking Council (formerly FRICC).
- Foamed Plastics:** See Cellular Plastic.
- Foil:** A thin, continuous sheet of metal.
- Free Connector:** A connector for attachment to the free end of a wire or cable.
- Frequency:** The number of times a periodic action occurs in a unit of time. The number of cycles that an electric current completes in one second.
- Frequency Response:** The characteristic of a device denoting the range of frequencies over which it may be used effectively.
- Funnel Entry:** Flared or widened entrance to a terminal or connector wire barrel.
- Fuse Wire:** Wire made from an alloy that melts at a relatively low temperature.
- Fused Coating:** A metallic coating which has been melted and solidified, forming a metallurgical bond to the base material.
- Fused Conductors:** Individual strands of heavy tinned copper wire stranded together and then bonded together by induction heating.
- Fused Spiral Tape:** A PTFE insulated hookup wire. The spiral wrapped conductor is passed through a sintering oven where overlaps are fused together.
- Gain:** The increase of voltage, current or power over a standard or previous reading. Usually expressed in decibels.
- Galvanometer:** An instrument for detecting or measuring small electrical current.
- Gas-Filled Cable:** A self-contained pressure cable in which the pressure medium is an inert gas having access to the insulation.
- Gauge:** A term used to denote the physical size of a wire.
- Giga:** A numerical prefix denoting one billion (10⁹).
- Gigahertz (GHz):** A unit of frequency equal to one billion hertz.
- Gimmick:** A short length of wire soldered onto a circuit component and used as a small adjustable capacitor.
- Graded-Index:** A type of optical fiber in which the refractive index of the core is in the form of a parabolic curve, decreasing toward the cladding. This type of fiber provides high bandwidth capabilities.
- Ground:** A conducting connection, whether intentional or accidental, between an electrical circuit (e.g. telecommunications) or equipment and the earth, or to some conducting body that serves in place of the earth.
- Ground Conductor:** A conductor in a transmission cable or line that is grounded.
- Ground Insulation:** The insulation used between a winding and the magnetic core or other structural parts, usually at ground potential.
- Ground Loop:** The generation of undesirable current flow within a ground conductor, owing to the circulation currents which originate from a second source of voltage.
- Ground Plane:** Expanded copper mesh which is laminated into some flat cable constructions as a shield.
- Ground Potential:** Zero potential with respect to the ground or earth.
- Hard Drawn Copper Wire:** Copper wire that has not been annealed after drawing.
- Harness:** An arrangement of wires and cables usually with many breakouts, which have been tied together or pulled into a rubber or plastic sheath, used to interconnect an electric circuit.
- Hash Mark Stripe:** A non-continuous helical stripe applied to a conductor for identification.
- Heat Distortion:** Distortion of flow of a material or configuration due to the application of heat.
- Heat Seal:** Method of sealing a tape wrap jacket by means of thermal fusion.
- Heater Cord:** Flexible stranded copper conductor, cotton wrapped, with rubber insulation and asbestos roving.
- Helical Stripe:** A continuous, colored, spiral stripe applied to a conductor for circuit identification.
- Helix:** Spiral winding.
- Henry:** The unit of inductance.
- Hertz (Hz):** A term replacing cycles-per-second as an indication of frequency.
- Heterogeneous Insulation:** A cable insulating system composed of two or more layers of different insulating materials.
- High-Temperature Wire and Cable:** Electrical wire and cables having thermal operating characteristics of 150°C and higher.
- High Voltage:** Generally, a wire or cable with an operating voltage of over 600 volts.
- Holding Strength:** Ability of a connector to remain assembled to a cable when under tension.
- Homogeneous Insulation:** A complete cable insulation structure whose components cannot be identified as layers of different materials.
- Hook-up Wire:** A wire used for low-current, low-voltage (under 1000 volts) applications within enclosed electronic equipment.
- Horizontal Cabling:** The wiring/cabling between the telecommunications outlet/connector and the horizontal cross-connect.
- Horizontal Cross-Connect:** A cross-connect of horizontal cabling to other cabling, e.g. horizontal, backbone or equipment.
- Hot Stamping:** Method of alpha numerical coding. Identification markings are made by pressing heated type and marking foil into softened insulation surfaces. See Surface Printing.
- Hot Tin Dip:** A process of passing bare wire through a bath of molten tin to provide a coating.
- Hybrid Cable:** An assembly of two or more cables (of the same or different types or categories) covered by one overall sheath.

Glossary

- Hygroscopic:** Capable of absorbing moisture from the air.
- Hypalon®:** DuPont's trade name for their chlorosulfonated polyethylene, an ozone-resistant synthetic rubber.
- Impact Tool:** Device used to punch new conductor onto IDs. This tool is typically equipped with a cutting blade for either 66 or 110 blocks.
- Impedance:** The total opposition that a circuit offers to the flow of alternating current or any other varying current at a particular frequency. It is a combination of resistance R and reactance X, measured in Ω .
- Impedance-Matching Transformer:** A transformer designed to match the impedance of one circuit to that of another (BALUN).
- Impulse:** A surge of unidirectional polarity.
- Impulse Strength:** The voltage breakdown of insulation under voltage surges on the order of microseconds in duration.
- Impulse Test:** An insulation test in which the voltage applied is an impulse voltage of specified wave shape.
- Incoherent Source:** (fiber optic) A light source which emits wide, diffuse beams of light of many wave lengths.
- Index-Matching Fluid:** (fiber optic) Fluid with refractive index same as fiber core; used to fill air gap between fiber ends at connectors.
- Index of Refraction:** The ratio of light velocity in a vacuum to its velocity in a given transmitting medium.
- Inductance:** The property of a circuit or circuit element that opposes a change in current flow, thus causing current changes to lag behind voltage changes. It is measured in henrys.
- Inductive Coupling:** Crosstalk resulting from the action of the electromagnetic field of one conductor on the other.
- Infrastructure, Telecommunications:** A collection of those telecommunications components, excluding equipment, that together provide the basic support for the distribution of all information within a building or campus.
- Insertion Loss:** As measure of the attenuation of a device by determining the output of a system before and after the device is inserted into the system.
- Insertion Tool:** A small, hand-held tool used to insert contacts into a connector.
- Insulated Wire:** A conductor of electricity covered with a non-conducting material.
- Insulating Joint:** A device which mechanically couples and electrically insulates the sheath and armor of contiguous lengths of cable.
- Insulation:** A material having high resistance to the flow of electric current. Often called a dielectric in radio frequency cable.
- Insulation Adhesion:** The degree of tightness of the insulation over the base conductor, measured in terms of force required to remove a specified length of insulation from the wire.
- Insulation Crimp:** The area of a terminal, splice or contact that has been formed around the insulation of the wire.
- Insulation Grip:** Extended cylinders at the rear of crimp-type contacts designed to accept the bared wire and a small length of its insulation.
- Insulation Piercing:** A method of crimping whereby lances cut the insulation of the wires and enter into the strands to make electrical contact.
- Insulation Resistance:** The ratio of the applied voltage to the total current between two electrodes in contact with a specific insulation, usually expressed in meg Ω -M feet.
- Insulation System:** All of the insulation materials used to insulate a particular electrical or electronic product.
- Integral Belt:** A layer of insulation or semiconductive material applied by extrusion over two or more insulated, twisted or parallel conductors, to form a round, smooth diameter.
- Interconnect:** A connection scheme that provides for the direct connection of individual cables to another cable or to an equipment cable without a patch cord.
- Interconnecting Cable:** The wiring between modules, between units or the larger portions of a system.
- Interconnecting Wire:** The physical wiring between components (outside a module), between modules, between units or between larger portions of a system or systems.
- Interconnection:** Mechanically joining devices together to complete an electrical circuit.
- Interface:** The two surfaces on the contact side of both halves of a multiple-contact connector which face each other when the connector is assembled.
- Intermediate Cross-Connect:** A cross-connect between 1st level and 2nd level backbone cabling.
- Internal Wiring:** Electronic wiring which interconnects components, usually within a sealed subsystem.
- Interstices:** Voids or valleys between individual strands in a conductor or between insulated conductors in a multiconductor cable.
- Ionization Voltage (Corona Level):** The minimum value of falling rms voltage which sustains electrical discharge within the vacuous or gas-filled spaces in the cable construction or insulation.
- Irradiation:** In insulations, the exposure of the material to high energy emissions for the purpose of favorably altering the molecular structure.
- Jack:** A plug-in type terminal widely used in an electronic apparatus for temporary connections.
- Jacket:** An outer protective sheath over primary insulation, braids, shields, cable components or over the cable itself. In fiber optics, a covering, over a fiber, bundle of fibers or cable which protects against the environment.
- JAN Specification:** Joint Army-Navy specification (replaced by current Military Specifications).
- Jumper:** An assembly of twisted pairs without connectors, used to join telecommunications circuits/links at the cross connect.
- Junction:** A point in a circuit where two or more wires are connected.
- Keying:** The mechanical feature of a connector system that guarantees correct orientation of a connection, or prevents the connection to a jack, or to an optical fiber adapter of the same type intended for another purpose.
- Kynar®:** Pennwalt trade name for polyvinylidene fluoride. Typically used as insulation for wire wrap wire.
- Lacing and Harnessing:** A method of grouping wires by securing them in bundles of designated patterns.
- Lacquer:** A liquid resin or compound applied to textile braid to prevent fraying, moisture absorption, etc.
- Laminated Tape:** A tape consisting of two or more layers of different materials bonded together.
- Laser Diode:** (fiber optic) A semiconductor diode that, when pulsed, a laser diode emits coherent light.
- Launch Angle:** (fiber optic) The angle between the radiation vector and the axis of the fiber or fiber bundle.
- Lay:** The length measured along the axis of a wire or cable required for a single strand (in stranded wire) or conductor (in cable) to make one complete turn about the axis of the conductor or cable.
- Layer:** Consecutive turns of a coil lying in a single plane.
- Leaching and Non-Leaching:** In a leaching wire, the plasticizer will migrate when exposed to heat. A non-leaching wire will retain its plasticizer under extreme temperature conditions and remain flexible after baking.
- Lead:** A wire, with or without terminals, that connects two points in a circuit.
- Lead-Cured:** A cable that is cured or vulcanized in a metallic lead mold.
- Lead Dress:** The placement or routing of wire and component leads in an electrical circuit.
- Lead-in:** The conductor or conductors that connect the antenna proper to electronic equipment.
- Leakage Current:** The undesirable flow of current through or over the surface of an insulation.
- Life Cycle:** A test to determine the length of time before failure in a controlled, usually accelerated, environment.
- Light Commercial Building:** A building or portion thereof that is intended for use with one to four (1-4) non-residential exchange access lines per tenant.
- Light-Intensity Ratio:** (fiber optic) Ratio of input light intensity to the output light intensity.
- Light Source:** (fiber optic) An object capable of emitting light. In fiber optics, the light source is normally an LED or a laser.
- Lightguide:** (fiber optic) A flexible bundle of fibers used to transmit light.
- Lightwave Communications:** (fiber optic) Communications using light to carry the information.
- Limits of Error:** The maximum deviation (in degrees of percent) of a thermocouple or thermocouple extension wire from standard emf-temperature to be measured.
- Limpness:** The ability of a cable to lay flat or conform to a surface.
- Line Balance:** The degree to which the conductors of a cable are alike in their electrical characteristics with respect to each other, to other conductors and to ground.
- Line Drop:** A voltage loss occurring between any two points in a transmission line, due to the resonance, reactance or leakage of the line.
- Line Loss:** The total of the various energy losses occurring in a transmission line.
- Line Voltage:** Voltage existing in a cable or circuit.
- Link:** An assembly of telecommunications facilities between two points, not including terminal equipment.

Glossary

- Listed:** Equipment included in a list published by an organization, acceptable to the authority having jurisdiction, that maintains periodic inspection of production of listed equipment, and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.
- Local Area Network (LAN):** A geographically limited communications network intended for the local transport of data, video and voice.
- Longitudinal Shield:** A tape shield, flat or corrugated, applied longitudinally with the axis of the core being shielded.
- Longitudinal Wrap:** Tape applied longitudinally with the axis of the core being covered.
- Loop Resistance:** The total resistance of two conductors measured round-trip from one end. Commonly used term in the thermocouple industry.
- Looping-in:** Wiring method which avoids tee joints by carrying the conductor or cable to and from the point to be supplied.
- Loss:** Energy dissipated without accomplishing useful work.
- Loss Factor:** The product of the dissipation and dielectric constant of an insulating material.
- Lossy Line:** A cable having large attenuation per unit of length.
- Low-Loss Dielectric:** An insulating material that has a relatively low dielectric loss, such as polyethylene or Teflon®.
- Low-Noise Cable:** Cable configuration specially constructed to eliminate spurious electrical disturbances caused by capacitance changes or self-generated noise induced by either physical abuse or adjacent circuitry.
- Low Tension:** Low voltage, as applied to ignition cable.
- Lug:** Termination, usually crimped or soldered to the conductor, with provision for screwing on to the terminal.
- m:** Meter.
- Magnet Wire:** Insulated wire intended for use in windings on motor, transformer and other coils for electromagnetic devices.
- Magnetic Field:** The region within which a body or current experiences magnetic force.
- Magnetic Flux:** The rate of flow of magnetic energy across or through a surface (real or imaginary).
- Magnetic Noise:** Caused by change in current level, e.g. ac powerline (creates magnetic field around the cable) this magnetic field causes the magnetic noise.
- Main Cross-Connect:** A cross-connect for 1st level backbone cables, entrance cables and equipment cables.
- Marker Tape:** A tape laid parallel to the conductors under the sheath in a cable, imprinted with the manufacturer's name and the specification to which the cable is made.
- Master Antenna Television (MATV):** A combination of components providing multiple television receiver operations from one antenna or group of antennas normally on a single building.
- Material Scattering Loss:** (fiber optics) Loss due to fluctuations in the refractive index and to inhomogeneities in material composition and temperature.
- Media, Telecommunications:** Wire, cable or conductors used for telecommunications.
- Megarad:** A unit for measuring radiation dosage.
- Messenger:** Supporting member, usually a high-strength steel wire, used to suspend aerial cable. The messenger may be an integral part of the cable, or exterior to it (lashed messenger).
- Microbending Loss:** (fiber optic) Loss due to small geometrical irregularities along the core-clad interface of the fiber.
- Microfarad:** One-millionth of a farad, commonly abbreviated m-F.
- Micromicrofarad:** One-millionth of a microfarad. (uuf, uufd, mmf, mmfd m-m F are common abbreviations.)
- Microwave:** A short (usually less than 30 cm.) electrical wave.
- Mil:** A unit used in measuring diameter of a wire or thickness of insulation over a conductor. One-one thousandth of an inch (.001").
- Mineral-Insulated:** Cable and thermocouple wire consisting of one or more conductors surrounded by magnesium oxide insulation and enclosed in a liquid- and gas-tight metallic sheathing.
- Miniature Wire:** Insulated conductors of approximately 20-34 AWG.
- Mis-Match:** A termination having a different impedance than that for which a circuit or cable is designed.
- Mode:** One of the components of a general configuration of a propagating wave front.
- Modern:** Device which places and receives data signals over a common carrier's communication facility.
- Modular Jack:** This term is outmoded; see Outlet/Connector, Telecommunications.
- Modular Plug:** A telecommunications connector for wire or cords per the Part 68 Rules. A modular plug can have 6 or 8 contact positions, but not all the positions need be equipped with contacts.
- Modulation:** A process whereby certain characteristics of a wave, often called the carrier, are varied or selected in accordance with a modulating function.
- Modulus of Elasticity:** The ratio of stress to strain in an elastic material.
- Moisture Absorption:** The amount of moisture, in percentage, that a material will absorb under specified conditions.
- Moisture Resistance:** The ability of a material to resist absorbing moisture from the air or when immersed in water.
- Molded Plug:** A connector molded on either end of a cord or cable.
- Monomer:** The basic chemical unit used in building a polymer.
- Motor Lead Wire:** Wire which connects to the fragile magnet wire found in coils, transformers and stator or field windings.
- Multiconductor:** More than one conductor within a single cable complex.
- Multimode Optical Fiber:** An optical fiber that will allow many bound modes to propagate. The fiber may be either a graded-index or step-index fiber. See also: Optical Fiber Cable.
- Multiple Conductor Cable:** A combination of two or more conductors cabled together and insulated from one another and from sheath or armor where used.
- Multiple Conductor Concentric Cable:** An insulated central conductor with one or more tubular stranded conductors laid over it concentrically and insulated from one another.
- Multiplexing:** Simultaneous transmission of two or more messages over the same cable pair.
- Mutual Capacitance:** Capacitance between two conductors when all other conductors are connected together to shield and ground.
- Mylar®:** DuPont trademark for polyester film.
- Nanometer (nm):** One billionth of a meter (10^{-9} meter).
- Nanosecond:** One billionth of a second (10^{-9} seconds).
- National Electric Code (NEC):** A set of regulations governing construction and installation of electrical wiring and apparatus in the United States, established by the American National Board of Fire Underwriters.
- Neoprene:** A synthetic rubber with good resistance to oil, chemical and flame. Also called polychloroprene.
- Noise:** In a cable or circuit, any extraneous signal which tends to interfere with the signal normally present in or passing through the system.
- Nomex®:** DuPont trademark for a temperature-resistant, flame-retardant nylon.
- Non-Contaminating:** Type of PVC jacket material whose plasticizer will not migrate into the dielectric of a coaxial cable and thus avoids contaminating and destroying the dielectric.
- Nylon:** Thermoplastic with good chemical and abrasion resistance.
- NVP:** Nominal Velocity of Propagation.
- Off Center:** Conductor displaced within the cross-section of its insulation.
- Offgassing:** Percentage of a specified gas released during the combustion of insulation or jacketing material.
- Ohm:** A unit of electrical resistance.
- Oil Aging:** Cable aged in an accelerated manner by placement in an oil bath and heated to a pre-set temperature for a stated time.
- Oil-Filled Cable:** A self-contained pressure cable in which the pressure medium is low viscosity oil having access to the insulation.
- Opaque:** (fiber optic) Not permitting the passage of light.
- Open Cell:** Foamed or cellular material with cells which are generally interconnected.
- Optical Communication Cable:** (fiber optic) Fiber with a protective jacket around it.
- Optical Conductors:** (fiber optic) Materials which offer a low optical attenuation to transmission of light energy.
- Optical Fiber Cable:** An assembly consisting of one or more optical fibers.
- Optical Fiber Duplex Adapter:** A mechanical media termination device designed to align and join two duplex connectors.
- Optical Fiber Duplex Connector:** A mechanical media termination device designed to transfer optical power between two pairs of optical fibers.
- Optical Waveguide:** (fiber optic) A fiber used for optical communications. Analogous to a waveguide used for microwave communications.
- Oscillatory Surge:** A surge which includes both positive and negative polarity values.
- Outgassing:** The dissipation of gas from a dielectric evidencing decomposition.
- Outlet Box, Telecommunications:** A metallic or nonmetallic box mounted within a wall, floor or ceiling and used to hold telecommunications outlet/connectors or transition devices.

Glossary

- Outlet/Connector, Telecommunications:** A connecting device in the work area on which horizontal cable terminates.
- Overall Diameter:** Finished diameter over wire or cable.
- Overcoat Conductor:** A stranded conductor made from individual strands of tin-coated wire stranded together, and then given an overall tin coat.
- Overlap:** The amount the trailing edge laps over the leading edge of a spiral tape wrap.
- Oxygen Index:** Percentage of oxygen necessary to support combustion in a gas mixture.
- Ozone:** Reactive form of oxygen, typically found around electrical discharges and present in the atmosphere in small quantities.
- Packing Fraction:** (fiber optic) The ratio of active cross-sectional area of fiber core, or cores, to the total end surface of the fiber, or fiber bundle.
- Pair:** Two insulated wires of a single circuit associated together, also known as a "balance" transmission line.
- Parallel Pair:** A duplex construction of two insulated conductors laid parallel and then covered overall with a braid or jacket.
- Parallel Stripe:** A stripe applied longitudinally on a wire or cable parallel to the axis of the conductor.
- Patch Cord:** A length of cable with connectors on one or both ends used to join telecommunications links/circuits at the cross-connect.
- Patch Cord Cable:** Bulk cable used in the manufacture of patch cords.
- Patch Panel:** A cross-connect system of mateable connectors that facilitates administration.
- Pathway:** A facility for the placement of telecommunications cable. Synonym: Raceway.
- Pay-Off:** The process of feeding a cable or wire from a bobbin, reel or other package.
- Percent Plating:** Quantity of plating on a conductor expressed as a percentage by weight.
- Percentage Conductivity:** Conductivity of a material expressed as a percentage of that of copper.
- Periodicity:** The uniformly spaced variations in the insulation diameter of a transmission cable that result in reflections of a signal, when its wavelength or a multiple thereof is equal to the distance between two diameter variations.
- Permittivity:** See Dielectric Constant.
- Phase:** An angular relationship between waves.
- Phase Shift:** A change in the phase relationship between two alternating quantities.
- Photodetector (Receiver):** Converts light energy to electrical energy.
- Pick:** Distance between two adjacent crossover points of braid filaments. The measurement in picks per inch indicates the degree of coverage.
- Picofarad:** One-millionth of one-millionth of a farad. A micromicrofarad or picofarad (abbreviation pf). (See mm F).
- Pigtail Wire:** Fine-stranded, extra-flexible, rope-lay lead wire attached to a shield for terminating purposes.
- Pitch:** In flat cable, the nominal distance between the index edges of two adjacent conductors.
- Pitch Diameter:** Diameter of a circle passing through the center of the conductors in any layer of a multiconductor cable.
- Plain Conductor:** A conductor consisting of only one metal.
- Plain Weave:** A weave used on woven cables. Threads between the wires act as binders and give the cable lateral stiffness and linear flexibility. Also called Standard and Square Weave.
- Planetary Cabler:** A cabler capable of laying down any number of shielded, overbraided or jacketed singles, pairs, called groups, or any combination of them in sequence.
- Planetary Twister:** A twisting machine whose payoff spools are mounted in rotating cradles that hold the axis of the spool in a fixed direction as the spools are revolved so no twist is built up in each wire.
- Plastic Deformation:** Change in dimensions under load that is not recovered when the load is removed.
- Plasticizer:** A chemical agent added to plastics to make them softer and more pliable.
- Plenum:** The air return path of a central air handling system, either ductwork or open space over a suspended ceiling.
- Plenum Cable:** Cable approved by a recognized agency such as UL for installation in plenums without the need for conduit.
- Plug:** The part of the two mating halves of a connector which is moveable when not fastened to the other mating half.
- Ply:** The number of individual strands or filaments twisted together to form a single thread.
- Point-to-Point:** A type of connection established between two specific locations, as between two buildings.
- Point-to-Point Wiring:** An interconnecting technique wherein the connections between components are made by wires routed between connecting points.
- Polarization:** The orientation of a flat cable or a rectangular connector.
- Polishing:** (fiber optic) Act of smoothing ends of fibers to an 'optically smooth' finish, generally using abrasive.
- Polyester:** Polyethylene terephthalate, used extensively as a moisture-resistant cable core wrap.
- Polyethylene:** A thermoplastic material having excellent electrical properties.
- Polyhalocarbon:** A general name for polymers containing halogen atoms. The halogens are fluorine, chlorine, bromine and iodine.
- Polymer:** A material of high molecular weight formed by the chemical union of monomers.
- Polyolefin:** Any of the polymers and copolymers of the ethylene family of hydrocarbons.
- Polypropylene:** A thermoplastic similar to polyethylene but stiffer and having higher softening point (temperature); excellent electrical properties.
- Polyurethane:** Class of polymers known for good abrasion and solvent resistance (may be applied in solid or cellular form).
- Porosity:** Multiple voids in an insulation cross-section.
- Potting:** The sealing of a cable termination or other component with a liquid which thermosets into an elastomer.
- Power Cables:** Cables of various sizes, construction and insulation, single or multi-conductor designed to distribute primary power to various types of equipment.
- Power Factor:** The ratio of resistance to impedance. The ratio of the actual power of an alternating current to apparent power. Mathematically, the cosine of the angle between the voltage applied and the current resulting.
- Pre-Bond:** Stranded wire which has been fused, topcoat-tinned or overcoat-tinned.
- Prewiring:** Wiring installed
- Before walls are enclosed or finished.
 - In anticipation of future use or need.
- Primary:** The transformer winding which receives the energy from a supply circuit.
- Primary Insulation:** The first layer of non-conductive material applied over a conductor, whose prime function is to act as electrical insulation.
- Primary Protection:** The minimum protection required on all exposed facilities to comply with NEC requirements.
- Primary Wiring:** A printed circuit intended to provide point-to-point electrical connections.
- Programming:** Ability to select various circuit patterns by interconnecting appropriate contacts on one side of a connector plug or panel.
- Propagation Delay:** Time delay between input and output of signal.
- Propagation Time:** Time required for a wave to travel between two points on a transmission line.
- Protocol:** A set of rules for communicating.
- Proximity Effect:** Nonuniform current distribution over the cross-section of a conductor caused by the variation of the current in a neighboring conductor.
- Pull Box:** A device to access a raceway used to facilitate placing of wire or cables.
- Pull Cord/Pull Wire:** Cord or wire placed within a raceway and used to pull wire and cable through the raceway.
- Pull Strength:** See Pull Tension.
- Pull Tension:** The maximum pulling force that can be safely applied to a cable without damage.
- Pulling Eye:** A device used to pull cable into or from a duct.
- Pulse:** Energy which changes abruptly from an intensity to another. May be light energy or electrical energy.
- Pulse Cable:** A type of coaxial cable constructed to transmit repeated high-voltage pulses without degradation.
- Polyvinyl Chloride (PVC):** A general-purpose thermoplastic widely used for wire and cable insulations and jackets.
- Quad:** A series of four separately insulated conductors, generally twisted together in pairs. Also, a series-parallel combination of transistors with increased reliability because failure of one transistor will not disable the entire circuit.
- Quadders:** Three-bay machines which can twist four wires together and cable braided and shielded wires with varying lay lengths.
- Raceway:** Any channel designed for holding wires or cables, e.g. conduit, electrical metallic tubing, sleeves, slots, underfloor raceways, cellular floors, surface raceways, lighting fixture raceways, wireways, cable troughs, busways, auxiliary gutters and ventilated flexible cableways. Synonym: Pathway.
- Rack:** See: Cable Rack.
- Radio Frequency:** The frequencies in the electromagnetic spectrum that are used for radio communications.

Glossary

- Random Winding:** A winding in rotating equipment wherein the wires do not lie in an even pattern.
- Reactance:** The opposition offered to the flow of alternating current by inductance or capacitance of a compound or circuit.
- Red Plaque:** A powdery, brown-red growth found on silvercoated copper conductors and shield braids.
- Redraw:** The consecutive drawing of wire through a series of dies to reach a desired wire size.
- Reducing Joint:** A joint between two lengths of cable where the conductors are not the same size.
- Reel:** A revolvable flanged device made of wood or metal, used for winding flexible metal wire or cable.
- Reflection:** (fiber optic) Change in direction of a light wave or ray.
- Reflection Loss:** The part of a signal which is lost due to reflection of power at a line discontinuity.
- Refraction:** (fiber optic) The bending of lightwaves or rays as they go from one material to another due to the difference in velocities in the materials.
- Reinforced Sheath:** The outermost covering of a cable that has cable sheath constructed in layers with the addition of a reinforcing material, usually a braided fiber, molded in place between layers.
- Remanence:** The magnetic induction that remains in a magnetic circuit after the removal of an applied magnetomotive force.
- Repeater:** A device which consists of a transmitter and a receiver or transmitter, used to regenerate a signal to increase the system transmission length.
- Resistance:** A measure of the difficulty in moving electrical current through a medium when voltage is applied. It is measured in Ω .
- Resistive Conductor:** A conductor with high electric resistance.
- Retractile Cord:** A cord having specially treated insulation or jacket so that it will retract.
- Return Wire:** A ground wire or the negative wire in a direct-current circuit.
- Ribbon Cable:** A flat cable of individually insulated conductors lying parallel and held together by means of adhesive or woven textile yarn.
- Ridge Marker:** One or more ridges running laterally along the outer surface of a plastic-insulated wire for purposes of identification.
- Rigid Bay:** Cabling equipment that maintains component sequence, and can produce cables with distinct layers.
- Rigid Coaxial Cable:** Nonflexible coaxial cable, usually a metal tube armored coaxial cable.
- Ring Tongue:** A solderless terminal that connects wire to a stud.
- Ring Out:** Locating or identifying specific conductive paths by passing current through selected conductors.
- Rip-Cord:** 1.) Two or more insulated conductors in a parallel configuration which may be separated to leave the insulation of each conductor intact. 2.) A small filament cord used to rip through the outer cable sheath.
- RoHS (Restriction on Hazardous Substances):** European Union directive that restricts use of heavy metal substances.
- Rope Concentric:** A group of standard conductors assembled in a concentric manner.
- Rope Lay Conductor:** A conductor composed of a central core surrounded by one or more layers of helically laid groups of wires.
- Rope Unilay:** A group of stranded conductors assembled in a unilay manner.
- Round Wire Shields:** Shields constructed from bare, tinned or silver-plated copper wire that include braided, spiral and reverse spiral.
- Routers:** A device that determines how to forward a packet toward its destination, based on tables that indicate the costs, congestion status and other factors associated with possible routes. Also called a level 3 relay or an intermediate system.
- Rubber (Wire Insulation):** Term used to describe wire insulations made of thermosetting elastomers; occurs naturally or may be made synthetically.
- Rulan®:** DuPont's trade name for their flame-retardant polyethylene insulating material.
- Screen:** A shield placed over the entire core.
- Secondary Insulation:** A nonconductive material that protects the conductor against abrasion and provides a second electrical barrier.
- Segmental Conductor:** A stranded conductor consisting of three or more stranded conducting elements, each element having approximately the shape of the sector of a circle, assembled to give a substantially circular cross-section.
- Selenium Cure:** Process used to cure neoprene and rubber jacketed wires and cables.
- Self-Extinguishing:** Characteristic of a material whose flame is extinguished after the igniting flame source is removed.
- Semi-Conducting Jacket:** A jacket having a sufficiently low resistance so that its outer surface can be kept at substantially ground potential.
- Semi-Rigid:** A cable containing a flexible inner core and a relatively inflexible sheathing.
- Semi-Solid:** An insulation cross-section having a partially open space between the conductor and the insulation perimeter.
- Separator:** A layer of insulating material which is placed between a conductor and its dielectric between a cable jacket and the components it covers, or between various components of a multiple-conductor cable.
- Series Circuit:** A circuit in which the components are arranged end to end to form a single path for current.
- Serve:** A filament or group of filaments such as fibers or wires, wound around a central core.
- Serving:** A wrapping applied over the core of a cable or over a wire.
- Sheath:** See Cable Sheath.
- Shield:** In cables, a metallic layer placed around a conductor or group of conductors to prevent electrostatic or electromagnetic interference between the enclosed wires or external fields.
- Shield Coverage:** Amount of outer cable covered by the shielding material.
- Shield Effectiveness:** The ability of a shield to screen out undesirable signals.
- Shielded Line:** A transmission line whose elements confine propagated radio waves to an essentially finite space inside a tabular conducting surface called the sheath, thus preventing the line from radiating radio waves.
- Shielded-Type Cable:** A cable in which the surface of the insulation is at ground potential.
- Shunt Wire:** A conductor joining two parts of an electric circuit to divert part of the current.
- Signal:** A current used for convey information, either digital, analog, audio or video.
- Silicone:** A material made from silicon and oxygen. Can be in thermosetting elastomer or liquid form. The thermosetting elastomer form is noted for high heat resistance.
- Silicone Treating:** A silicone liquid treatment applied to insulated conductors to allow for easy jacket stripping.
- Sine Wave:** A wave that can be expressed as the sine of a linear function of time, or space or both.
- Single-ended:** Unbalanced, such as grounding one side of a circuit or transmission line.
- Single-Faced Tape:** Fabric tape finished on one side with a rubber or synthetic compound.
- Singlemode Fiber:** A fiber wave guide in which only one mode will propagate. The fiber has a very small core diameter of approximately 8mm. It permits signal transmission at extremely high bandwidths and is generally used with laser diodes.
- Sizing:** Applying a material to a surface to fill pores.
- Skeleton Braid:** Widely separated braid of fiber copper or steel, used to hold core together, for reinforcing jacket or for shielding.
- Skew Rays:** A ray that does not intersect the fiber axis. Generally, a light ray that enters the fiber core at a very high angle.
- Skim Tape:** Filled tape coated on one or both sides with a thin film of uncured rubber or synthetic compound to produce a coating suitable for vulcanization.
- Skin Effect:** The tendency of alternating current, as its frequency increases, to travel only on the surface of a conductor.
- Sleeve:** A braided, knitted or woven tube used over wires or components as insulation tubing. Also called Sleeving.
- Solid Conductor:** A conductor consisting of a single wire.
- Source Coupling Loss:** (fiber optic) Loss of light intensity as light from source passes into fiber.
- Space, Telecommunications:** An area used for housing the installation and termination of telecommunications equipment and cable, e.g. telecommunications closets, work areas and manhole/handholes.
- Span:** (1.) In flat conductors, distance between the reference edge of the first and the last conductor. (2.) In round conductors, distance between centers of the first and last conductors. (3.) In aerial cable, the distance between poles or support clamps.
- Spark Test:** A test designed to locate pin-holes in the insulation of a wire or cable by application of a voltage for a very short period of time while the wire is being drawn through the electrode field.
- Specific Gravity:** The ratio of the density (mass per unit volume) of a material to that of water.
- Spectral Bandwidth:** The difference between wavelengths at which the radiant intensity of illumination is half its peak intensity.
- Spectral Response:** (fiber optic) The response of a detector (or a system) over different wavelengths.
- Spectrum:** Frequencies that exist in a continuous range and have a common characteristic.
- Speed of Light (c):** 2.998×10^8 meters per second.
- Spiral Shield:** A metallic shield of fine-stranded wires applied spirally rather than braided.

Glossary

- Spiral Stripe:** A color-coding stripe applied helically to the surface of an insulated wire or cable.
- Spiral Wrap:** The helical wrap of a tape or thread over a core.
- Splice:** A joining of conductors, generally from separate sheaths.
- Splice Closure:** A device used to protect a cable or wire splice.
- Spread Spectrum:** A modulation technique for multiple access, or for increasing immunity to noise and interference.
- Standing Wave:** The stationary pattern of waves produced by two waves of the same frequency traveling in opposite directions on the same transmission line.
- Standing Wave Ratio (SWR):** In a transmission line, waveguide, or analogous system, a figure of merit used to express the efficiency of the system in transmitting power.
- Star Topology:** A topology in which each telecommunications outlet/connector is directly cabled to the distribution device.
- Stay Cord:** A component of a cable used to anchor the cable ends at their points of termination and to keep any pull of the cable from being transferred to the electrical connections.
- Step Index Fiber:** (fiber optic) A multimode fiber consisting of a core of uniform refractive index surrounded by cladding of slightly lower refractive index.
- Strand:** One of the wires of any stranded conductor.
- Strand Lay:** The distance of advance of one strand of a spirally stranded conductor, in one turn, measured axially.
- Stranded Conductor:** A conductor composed of groups of wires twisted together.
- Strap:** Square- or rectangular-section bare conductor manufactured and used in coil form.
- Strip:** To remove insulation from a cable.
- Structural Return Loss:** Backward reflected energies from uneven parts of the cable structure causing impedance variations are termed structural return loss.
- Surface Resistivity:** The resistance of a material between two opposite sides of a unit square of its surface. It is usually expressed in Ω .
- Surge:** A temporary and relatively large increase in the voltage or current in an electric circuit or cable. Also called Transient.
- Suspended Ceiling:** See False Ceiling.
- Sweep-test:** Pertaining to cable, the frequency response is verified by generating an rf voltage whose frequency is swept repeatedly through a given frequency range at a rapid constant rate while the cable response is observed.
- Take-Up:** The process of accumulating wire or cable onto a reel, bobbin or some other type of pack. Also, the device for pulling wire or cable through a piece of equipment or machine.
- Tank Test:** A voltage dielectric test in which the test sample is submerged in water and voltage is applied between the conductor and water as ground.
- Tape:** A relatively narrow woven or cut strip of fabric, paper or film material.
- Tape Cable:** A form of multiple conductor consisting of parallel metal strips imbedded in insulating material.
- Tape Wrap:** A spirally applied tape over an insulated or uninsulated wire.
- Taped Insulation:** Insulation of helically wound tapes applied over a conductor or over an assembled group of insulated conductors.
- Taping:** Process of insulating continuous length, large diameter wires with tape of non-extrudable materials.
- TB:** Terminal Block
- Tear Strength:** The force required to initiate or continue a tear in a material under specified conditions.
- Teflon®:** DuPont company trade name for fluorocarbon resins. FEP, PFA and TFE are typical materials.
- Tefzel®:** DuPont trade name for a fluorocarbon material typically used as a wire wrap insulation.
- Telecommunications:** The communication of information over some distance, including interbuilding and intrabuilding distances.
- Telecommunications Closet:** See Closet, Telecommunications.
- Telecommunications Entrance Facility:** See Entrance Facility, Telecommunications.
- Telecommunications Entrance Point:** See Entrance Point, Telecommunications.
- Telecommunications Entrance Room or Space:** See Entrance Room or Space, Telecommunications.
- Telecommunications Equipment Room:** See Equipment Room, Telecommunications.
- Telecommunications Grounding Busbar:** A common point of connection for telecommunications system and bonding to ground, which is located in the telecommunications closet or equipment room.
- Telecommunications Infrastructure:** See Infrastructure, Telecommunications.
- Telecommunications Outlet/Connector:** See Outlet/Connector, Telecommunications.
- Telemetry Cable:** Cable used for transmission of information from instruments to the peripheral recording equipment.
- Temperature Rating:** The maximum temperature at which an insulating material may be used in continuous operation without loss of its basic properties.
- Tensile Strength:** The pull stress required to break a given specimen.
- Tension Member:** A member included in a fiber cable to add tensile strength.
- Terminal:** (1) A point at which information may enter or leave a communications network; (2) the input-output associated equipment; or (3) a device by means of which wires may be connected to each other.
- Termination Hardware:** This term is outmoded. See Connecting Hardware.
- Test Lead:** A flexible, insulated lead wire used for making tests, connecting instruments to a circuit temporarily or for making temporary electrical connections.
- Textile Braid:** Any braid made from threads of cotton silk, or synthetic fibers.
- Thermal Aging:** Exposure to a thermal condition or programmed series of conditions for predescribed periods of time.
- Thermocouple Lead Wire:** An insulated pair of wires used from the couple to a junction box.
- Thermoplastic:** A material which softens when heated and becomes firm on cooling.
- Thermoset:** A material which hardens or sets when heat is applied, and which, once set, cannot be resoftened by heating. The application of heat is called "curing."
- Three-Phase Current:** Current delivered through three wires, with each wire serving as a return for the other two.
- Three-Phase Three-Wire System:** An alternating current supply system comprising three conductors over which three-phase power is sent.
- Three-Wire System:** A d-c or single-phase a-c system comprising three conductors, one of which is maintained at a potential midway between the potential of the other two.
- Tin Overcoat (TOC):** Tinned copper wire, stranded, then coated with pure tin.
- Tinsel Wire:** A low-voltage stranded wire, with each strand a very thin conductor ribbon spirally wrapped around a textile yarn.
- Topcoat:** Bare (untinned) copper wire, stranded then coated with pure tin.
- Topology:** The physical or logical arrangement of a telecommunications system.
- Tracer:** A means of identifying polarity.
- Transducer:** A device for converting mechanical energy to electrical energy.
- Transfer Impedance:** The ratio of the source voltage of the wires inside the cable to the shield current of the cable or connectorized cable assembly.
- Transition Point:** A location in the horizontal cabling where flat undercarpet cable connects to round cable.
- Transmission:** Transfer of electric energy from one location to another through conductors or by radiation or induction fields.
- Transmission Cable:** Two or more transmission lines. See Transmission Line.
- Transmission Line:** An arrangement of two or more conductors or a wave guide used to transfer signal energy from one location to another.
- Transmission Loss:** The decrease or loss in power during transmission of energy from one point to another. Usually expressed in decibels.
- Transmission Media:** The various types of wire and optical fiber cable used for transmitting voice or data signals. Typically, wire cable includes twisted pair, coaxial and twinaxial. Optical fiber cable includes single, dual, quad, stranded and ribbon (A1).
- Transmitter:** The electronic package that injects an electrical signal or light signal over the transmission medium.
- Transparent:** (fiber optic) Transmitting rays of light so that objects can be seen through the material.
- Transposition:** Interchanging the relative positions of wires to neutralize the effects of induction to or from other circuits or, to minimize interference pickup by the lead-in during reception.
- Tray Cable:** A factory-assembled multiconductor or multipair control cable approved under the National Electrical Code for installation in trays.
- Triaxial:** A three-conductor cable with one conductor in the center, a second circular conductor shield concentric with the first, and third circular conductor shield insulated from and concentric with the first and second, usually with insulation, and over a braid or impervious sheath overall.
- Triboelectric Noise:** Noise generated in a shielded cable due to variations in capacitance between shielding and conductor as the cable is flexed.

Glossary

- Triple Cable:** A cable composed of three insulated single conductors and one bare conductor, all twisted together. It may or may not have a common covering of binding.
- True Concentric:** A cable in which each successive layer has a reversed direction of lay from the preceding layer.
- Trunk Cable:** See Feeder Cable.
- Tubing:** A tube of extruded non-supported plastic material.
- Twin Cable:** A pair of insulated conductors twisted, sheathed or held together mechanically and not identifiable from each other in a common covering.
- Twin Coaxial:** A configuration containing two separate, complete coaxial cables laid parallel or twisted around each other in one complex.
- Twin Line:** A transmission line which has a solid insulating material, in which the two conductors are placed in parallel to each other.
- Twinner:** A device for twisting together two conductors.
- Twisted Pairs:** A cable composed of two small insulated conductors twisted together without a common covering.
- Unbalanced Line:** A transmission line in which voltages on the two conductors are unequal with respect to ground.
- Unidirectional Concentric Stranding:** A stranding where each successive layer has a different lay length, thereby retaining a circular form without migration of strands from one layer to another.
- Unidirectional Stranding:** A term denoting that in a stranded conductor, all layers have the same direction of lay.
- Unilay Strand:** A conductor constructed with a central core surrounded by more than one layer of helically-laid wires, with all layers having a common length and direction of lay.
- Velocity of Propagation (VP):** The speed of an electrical signal down a length of cable compared to speed in free space expressed as a percent. It is the reciprocal of the square root of the dielectric constant of the cable insulation.
- Volt:** A unit of electromotive force.
- Voltage:** The term most often used in place of electromotive force, potential difference or voltage drop to designate the electric pressure that exists between two points and is capable of producing a current when a closed circuit is connected between two points.
- Voltage Drop:** The voltage developed across a component or conductor by the current in the resistance or impedance of the component or conductor.
- Voltage Rating:** The highest voltage that may be continuously applied to a wire in conformance with standards or specifications.
- Voltage Standing Wave Ratio (VSWR):** The ratio of the maximum effective voltage to the minimum effective voltage measured along the length of a mis-matched radio frequency transmission line.
- Volume Resistivity (Specific Insulation Resistance):** The electrical resistance between opposite faces of a 1 cm. cube of insulating material, commonly expressed in Ω /centimeter.
- Vulcanization:** A chemical reaction in which the physical properties of an elastomer are changed by reacting it with sulfur or other cross-linking agents.
- Wall Thickness:** The thickness of the applied insulation or jacket.
- Water Absorption:** A test to determine the water absorbed by a material after a given immersion period.
- Waterblocked Cable:** A cable constructed with no internal voids in order to allow no longitudinal water passage under a given pressure.
- Watt:** A unit of electric power.
- Wave Form:** A graphical representation of a varying quantity. Usually, time is represented on the horizontal axis, and the current or voltage value is represented on the vertical axis.
- Wave Length:** The distance, measured in the direction of propagation, of a repetitive electrical pulse or waveform between two successive points that are characterized by the same phase of vibration.
- Wicking:** The longitudinal flow of a liquid in a wire or cable due to capillary action.
- Wire:** A conductor, either bare or insulated.
- Wire and Cable Marker:** Device for identification marking of wire and cable.
- Wire and Cable Tying, Clamping, and Harnessing Devices:** Tying tapes, lacing cords and flexible sleeveings which are used for wire and cable bundling, harnessing and holding. Other devices include plastic ties or clamps, spiral-cut plastic tubing and plastic U-shaped trays or ducts.
- Wire and Lead Cutters:** Tools for cutting that range from plier-type cutters to semiautomatic or fully automatic machines integrated with other wire processing operations such as stripping, forming and terminating.
- Wire Gauge:** A system of numerical designation of wire sizes.
- Wire Nut:** A closed-end splice that is screwed on instead of crimped.
- Wire Wrapped Connection:** A solderless connection made by wrapping bare wire around a square or rectangular terminal with a power or hand tool.
- Wire Wrapping Tools:** Portable electric tools and automatic stationary machines used to make solderless wrapped connections of wires to terminals.
- Wiring Closet:** See Telecommunications Closet.
- Work Area (Work Station):** A building space where the occupants interact with telecommunications terminal equipment.
- Wrapper:** An insulating barrier applied as a sheet or tape wrapped around a coil periphery.
- Yield Strength:** The minimum stress at which a material will start to physically deform without increase in load.
- Zytel®:** DuPont's trade name for nylon resins.

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Abbreviations & Acronyms

A-D: Analog to digital conversion	CEBEC: Belgium approval agency; Commitee Electrotechnique Belge Service de la Marque	DGM: Data Grade Medium
ac: Alternating current	CEE: European standards agency; International Commission on Rules for the Approval of Electrical Equipment	DISA: Defense Information Systems Agency (formerly DCA)
AC: Armored Cable, NEC Article 333 Cable Designation	CEN: European Committee for Standardization	DISI: Directory Information Services Infrastructure
ACO: Analog Central Office	CENELEC: European Committee for Electrotechnical Standardization	DIST: District
ACR: Attenuation to Crosstalk Ratio	CFC: Communications Flat Cable	DRT: Plastic range and dryer cord (CSA)
ADO: Auxilliary Disconnect Outlet	ckt: Circuit	DTE: Data Terminal Equipment
AER: Aerial	CLT or CLOS: Closet	DVD: Digital Versatile Disc
AF: Audio frequency	CL2: Class 2 Circuit Cable, NEC Article 725 Cable Designation	DW: Distribution Wire
AlA: American Institute of Architects	CL2P: Class 2 Circuit Plenum Cable, NEC Article 725 Cable Designation	E: Symbol for voltage. Usually used to represent direct voltage or the effective (root-mean-square) value of an alternating voltage
ALPETH: An aerial telephone cable having an aluminum shield and polyethylene jacket	CL2R: Class 2 Circuit Riser Cable, NEC Article 725 Cable Designation	EFTS: Electronic funds transfer system
ALS: A type of cable consisting of insulated conductors enclosed in a continuous, closely fitting aluminum tube	CL2X: Class 2 Circuit Limited Use Cable, NEC Article 725 Cable Designation	EIA: Electronic Industries Association
ALVYN: An indoor, riser rated telephone cable having an aluminum shield and vinyl jacket (PVC)	CL3: Class 3 Circuit Cable, NEC Article 725 Cable Designation	EMF: Electromotive Force
AM: Amplitude Modulation	CL3P: Class 3 Circuit Plenum Cable, NEC Article 725 Cable Designation	EMI: Electromagnetic Interference
ANSI: American National Standards Institute	CL3R: Class 3 Circuit Riser Cable, NEC Article 725 Cable Designation	EMT: Electric Metallic Tubing
ARPANET: Advanced Research Projects Agency Network	CL3X: Class 3 Circuit Limited Use Cable, NEC Article 725 Cable Designation	EP: Entrance point
ASCII: American Standard Code for Information Interchange	CM: Communications Cable, NEC Article 800 Cable Designation	EPDM: Ethylene-propylene-diene monomer rubber
ASME: American Society of Mechanical Engineers	CMA: Circular Mill Area	EPOS: Electronic Point-Of-Sale
ASP: A filled, direct burial telephone cable used in areas subject to rodent attack. It consists of a filled cable core, corrugated aluminum shield, corrugated steel tape, flooding compound and polyethylene jacket.	CMP: Communication Cable Plenum, NEC Article 800 Cable Designation	EPR: Ethylene-propylene rubber
ASTA: United Kingdom approval agency	CMR: Communications Cable Riser, NEC Article 800 Cable Designation	ER: Equipment room
ASTM: American Society for Testing and Materials	CMX: Communications Limited Use Cable, NEC Article 800 Cable Designation	ESS: Electronic Switching System
AWG: American Wire Gauge	CO: Central Office	ESTA: Australian approval agency; Electricity Trust of South Australia
AWM: Appliance wiring material	codec: Coder decoder	ETPC: Electrolytic Tough Pitch Copper
B & S Gauge: See American Wire Gauge (AWG)	COE: Central Office Equipment	ETV: Educational Television
B or BUR: Buried	COS: Cooperation for Open Systems	E/W: Equipped With
AWM: Appliance wiring material	COSINE: Cooperation for Open Systems Interconnection Network in Europe	EX or EXT: Extension
BCF: Billion Conductor Feet	COT: Central Office Terminal	EXCH: Exchange
BEF: Building Entrance Facility	CPC: Customer Premises Communication	f: Frequency
BER: Bit Error Rate	CPE: (1) Chlorinated Polyethylene (2) Customer Premises Equipment or Customer Provided Equipment	FAA: Federal Aeronautics Administration
BIC: Building Industry Consultant	CPU: Central Processing Unit	FCC: (1) Federal Communications Commission (2) Flat Conductor Cable, NEC Article 328 Cable Designation
BICSI: Building Industry Consulting Service International	CRT: Cathode Ray Tube	FDDI: Fiber Distributed Data Interface
BISDN: Broadband Integrated Services Digital Network	CSMA/CD: Carrier Sense Multiple Access/ Collision Detection	FDM: Frequency-Division Multiplexing
BTU: British Thermal Unit	CSPE: Chlorosulfonated Polyethylene	FDR: Feeder
CA: Cable	CTR: Certified Test Report	FEP: Fluorinated ethylene propylene
CATV: (1) Community Antenna Television; Cable Access Television (2) CATV Cable, NEC Article 820 Cable Designation	CV: Continuous vulcanization	FEXT: Far End Crosstalk
CATVP: CATV Plenum Cable, NEC Article 820 Cable Designation	D-A: Digital to analog conversion	FI: Approval agency of Finland; Electrical Inspectorate
CATVR: CATV Riser Cable, NEC Article 820 Cable Designation	DAF: Dedicated Access Facility	FIPS PUB: Federal Information Processing Standard Publication
CATVX: CATV Limited Use Cable, NEC Article 820 Cable Designation	dB: Decibel	FM: Frequency modulation
CB: Citizens band	DBS: Direct Broadcast Satellite	FOCIS: Fiber Optic Connector Intermateability Standard
C-C: Conductor to conductor capacitance	dc: Direct current	FOTP: Fiber Optic Test Procedure
CCITT: The International Telegraph and Telephone Consultative Committee	DCE: Data Circuit-Terminating Equipment	FOTS: Fiber Optics Transmission System
CCTV: Closed-circuit television	DCO: Digital Central Office	FPL: Power Limited Fire Protective Signaling Circuit Cable, NEC Article 760 Cable Designation
CDDI: Copper Distributed Data Interface	DCR: Direct Current Resistance	FPLP: Power Limited Fire Protective Signaling Circuit Plenum Cable, NEC Article 760 Cable Designation
CDF: Central Distribution Frame	DD: Distribution Designer or Distribution Device	FPLR: Power Limited Fire Protective Signaling Circuit Riser Cable, NEC Article 760 Cable Designation
CDO: Community Dial Office	DEMARC: Demarcation point	FR-1: A flammability rating established by Underwriter's Laboratories for wires and cables that pass a specially designed vertical flame test
	DEMKO: Approval agency of Denmark	freq: Frequency
		FRICC: Federal Research Internet Coordinating Committee (now FNC)

Abbreviations & Acronyms

FRPE: Flame Retardant Polyethylene	kHz: Kilohertz	NEXT: Near End Crosstalk
ft: Foot	Kilo: A numerical prefix denoting 1000 (10 ³)	nf: Nanofarad
FTP: Fire Transfer Protocol	km: Kilometer	NFPA: National Fire Protection Association
ga: Gauge	KTS: Key Telephone Service	NI: Network Interface
gHZ: Gigahertz	kV: Kilovolt	NID: Network Interface Device
grd: Ground	kVA: Kilovolt Ampere	NIST: National Institute of Standards and Technology (formerly NBS)
GTO: Gas tube sign and oil-burner ignition cable. 5,000V-15,000V.	kW: Kilowatt	NIU: Network Interface Unit
H: Designation for intensity of magnetic energy	LAN: Local Area Network	nm: Nanometer
hc: Handset combination (single-line telephone)	LASER: Light Amplification by Stimulated Emission of Radiation	NM & NMC: Non Metallic Sheathed Cable, NEC Article 336 Cable Designation
HC: Horizontal cross-connect	LATA: Local Access Transport Area	NPLF: Non Power-Limited Fire Protective Signaling Circuit Cable, NEC Article 760 Cable Designation
hck: Handset combination; key (six-button telephone)	lbf: Pound force	NPLFP: Non Power-Limited Fire Protective Signaling Circuit Plenum Cable, NEC Article 760 Cable Designation
HDPE: High Density Polyethylene	LBO: Line Buildout	NPLFR: Non Power-Limited Fire Protective Signaling Circuit Plenum Cable, NEC Article 760 Cable Designation
HF: High Frequency	LDPE: Low Density Polyethylene	NRZ: Non Return to Zero
hh: Handhole	LEC: Local Exchange Carrier	NRZI: Non Return to Zero Inverted
Hi-Pot: A test designed to determine the highest voltage that can be applied to a conductor without breaking through the insulation.	LED: Light-Emitting Diode	OC: Optical Carrier
HPD: Rubber- and asbestos-insulated heater cord. No braid on individual conductors but with braid overall. Also made with neoprene insulation and no asbestos or PVC/NBC.	LLDPE: Linear Low Density Polyethylene	ODC: Ozone Depleting Chemical
HPN: Two-conductor, neoprene-insulated heater cord. Parallel construction. For use in damp locations.	LOCA: Loss of Coolant Accident	OP: Outside Plant
HSJ: Same as type HS but with #18, #16 and #14 conductors and differing thickness of jacket.	locap: Low-capacitance, low-loss paired cable	OPE: Outside Plant Engineer
HVAC: Heating, ventilation and air conditioning	MAC: Moves, Adds and Changes	OSHA: Occupational Safety and Health Administration
Hz: Hertz	MAP: Manufacturing Automation Protocol	OSI: Open Systems Interconnection
i: Symbol used to designate current	MATV: Master Antenna Television	OVE: Approval agency of West Germany; Oesterreichischer Verband für Elektrotechnik
IC: Intermediate cross-connect	Mbps: Megabits per second	PABX: Private Automatic Branch Exchange
ICEA: Insulated Cable Engineers Association	MC: (1) main cross-connect (2) Metal Clad Cable, NEC Article 334 Cable Designation	PAM: Pulse Amplitude Modulation
IDC: Insulation Displacement Connector	MCM: One thousand circular mils	PAP: A commonly used term for air core (unfilled) direct burial telephone cable with a corrugated aluminum shield
IEC: International Electrotechnical Commission	MDF: Main Distribution Frame	PBX: Private Branch Exchange
IEEE: Institute of Electrical and Electronics Engineers	MDPE: Medium Density Polyethylene	PC: Personal Computer
IGS: Integrated Gas Spacer Cable, NEC Article 325 Cable Designation	Meg or Mega: A numerical prefix denoting 1,000,000 (10 ⁶)	PCB: Printed Circuit Board
IMSA: International Municipal Signal Association	M/G: Motor/Generator Set	P-FEP: Prysmian proprietary dielectric material used in conjunction with FEP.
in: Inch	MH: Manhole	PCM: Pulse Code Modulation
IRSG: Internet Research Steering Group	Mho: The unit of conductivity. The reciprocal of an ohm.	PCP: A commonly used term for air core (unfilled) direct burial cable with a corrugated copper shield
IRTF: Internet Research Task Force	MHz: Megahertz	PE: Polyethylene
IS: International Standard	Mi: Mineral Insulated Cable, NEC Article 330 Cable Designation	pf: Picofarad
ISA: Instrument Society of America	Micro: A numerical prefix denoting one-millionth (10 ⁶)	PFA: Polyfluoroalkoxy
ISDN: Integrated Services Digital Network	MIL STD: Military Standard	PIC: A general term for any type of plastic insulated telephone cable
ISO: International Organization for Standardization	MILNET: Military Network	Pico: A numerical prefix denoting one-millionth of one-millionth (10 ⁻¹²)
ISOC: Internet Society	MLT: Multi-Level Threshold	PL: Private Lines
ITCO: Independent Telephone Company	mm: Millimeter	PLSJ: All-rubber, parallel-jacketed, two-conductor, light-duty cord for pendant or portable use in damp locations. 300V.
ITU-T: International Telecommunications Union - Telecommunications Standardization Section	Modem: Modulator demodulator	PLT: (1) Plant (2) Same as PLSJ except thermo-plastic insulation
IW (C): Inside Wiring (cable)	MTT: Main Telephone Terminal	PLTC: Power Limited Tray Cable, NEC Article 725 Cable Designation
J: Joule	MTW: Machine Tool Wire	PM: Phase Modulation
kcmil: One thousand circular mils	MV: Medium Voltage Cable, NEC Article 326 Cable Designation	POI: Point Of Interface
KEMA KEUR: Approval agency of the Netherlands	MW: Radio hookup wire with polyvinyl insulation and plain or nylon jacket or braid, or shield, 1000V	POSJ: All-rubber, parallel, light duty rip-cord for use on lamps and small appliances, 300V, 60°C
kft: An abbreviation for 1000 ft.	N: Newton	
	NAIC: Network Applications and Information Center	
	NASA: National Aeronautics and Space Administration	
	NBR: Natural butadiene-acrylonitrile copolymer rubber	
	NBS: National Bureau of Standards (now NIST)	
	NEC: National Electrical Code	
	NEMA: National Electrical Manufacturers Association	
	NEMKO: Approval agency of Norway	
	NESC: National Electrical Safety Code	

Abbreviations & Acronyms

POT: Thermoplastic, parallel, light duty rip-cord. 300V, 60°C to 105°C.	SP-2: Same as SP-1, but heavier construction, with or without third conductor for grounding purposes. 300V.	TP-PMD: Twisted Pair-Physical Medium Dependent
POTS: Plain Old Telephone Service (colloquial)	SP-3: Same as SP-23, but heavier construction for refrigerators or room air conditioners. 300V.	TPDDI: Twisted Pair Distributed Data Interface
PP: Polypropylene	SPC: Stored Program Control	TSB: Telecommunications System Bulletin
PR: Pair	SPC: Single Point Ground	TT: Telephone Terminal
PTFE: Polytetrafluoroethylene	SPT-1: Same as SP-1, except all-thermoplastic. 300V. With or without third conductor for grounding.	TTB: Telephone Terminal Board
PTSS: Passive Transmission Sub-System	SPT-2: Same as SP-2, except all-thermoplastic. 300V. With or without third conductor for grounding.	TTY: Text Telephones
PVC: Polyvinyl Chloride	SPT-3: Same as SP-3, except all-thermoplastic. 300V. With or without third conductor for grounding.	TW: Thermoplastic vinyl-jacketed building wire, moisture-resistant. 60°C.
PVDF: Polyvinylidene Fluoride	SRD: Portable range or dryer cable. Three or four rubber-insulated conductors with rubber or neoprene jacket, flat or round construction. 300V, 60°C.	UCC: Uniform Code Council
R: Symbol for resistance	SRDT: Same as SRD, except all-thermoplastic with a maximum temperature of 90°C.	UF: Thermoplastic underground feeder and branch circuit cable
R-F: Radio-frequency	SRL: Structural return loss	UF: Underground Feeder and Branch Circuit Cable, NEC Article 339 Cable Designation
RCDD: Registered Communication Distribution Designer	ST: Hard-service cord, jacketed, same as type S except all-plastic construction, 600V, 60°C to 105°C.	UG: Underground
REA: Rural Electrification Administration	STA: Station	UHF: Ultra High Frequency, 300 to 3,000 MHz
REP: Repair	STP: Shielded twisted pair	UL: Underwriter's Laboratories, Inc.
RFQ: Request for Quote	SV: Vacuum cleaner cord, two or three-conductor, rubber-insulated. Overall rubber jacket. For light-duty in damp locations. 300V, 60°C.	µm: Micron or micrometer
RG/U: General utility grade military coaxial cable	SVO: Same as SV except carolprene jacket, 300V, 60°C.	UPC: Universal Packaging Code
RH: Relative humidity	SVT: Same as SV except all-plastic construction. With or without third conductor for grounding purposes only. 300V, 60°C to 90°C.	UPS: Uninterruptible Power Supply
RJ-45: A specific pin-point assignment for an eight position modular telecommunications connector.	SW: Station Wire	USE: Underground Service Entrance Cable, NEC Article 338 Cable Designation
RMS: (1) rack mount space (2) Root Mean Squares	SWB: Switchboard	UTE: Approval agency for France; Union Technique de l'Electricite
RoHS: Restriction on Hazardous Substances	SWR: Standing Wave Ratio	UTP: Unshielded twisted-pair
S: Heavy-duty, rubber-insulated portable cord. Stranded copper conductors with separator and individual rubber insulation. Two or more color-coded conductors cabled with filler, wrapped with separator and rubber jacketed overall, 600 Volts.	SYS: System	V: Volt
SAE: Society of Automotive Engineers	TC: (1) Power and Control Tray Cable, NEC Article 340 Cable Designation	VDE: West Germany approval agency
SANZ: Standards Association of New Zealand	(2) Telecommunications Closet	VHF: Very High Frequency, 30 to 300 MHz
SBR: Styrene Butadiene Rubber	TCP: Transmission Control Protocol	VP: Velocity of Propagation
ScTP: Screened Twisted Pair	TDM: Time-Division Multiplexing	VSWR: Volume Standing Wave Ratio
SDN: Switched Digital Network	TEL: Telephone	VW-1: A flammability rating established by Underwriters Laboratories for wires and cables that pass a specially designed vertical flame test, (formerly designated FR-1)
SE: Service Entrance Cable, NEC Article 338 Cable Designation	TELCO: Telephone Company	W: Symbol for watt or wattage
SEMKO: Approval agency for Sweden	TERM: Terminal or termination	WA: Work area
SFTP: Simple File Transfer Protocol	TEW: Canadian Standard Association type appliance wires. Solid or stranded single conductor, plastic-insulated, 600V, 105°C.	WP: Waterproof Outlet
SI: System Internationale	TF: Fixture wire, thermoplastic-covered solid or seven strands. 60°C.	X: Cross-connect
SJ: Junior hard-service, rubber-insulated pendant or portable cord. Same construction as type S, but 300V. Jacket thickness different.	TFE: Tetrafluoroethylene	XLPE: Crosslinked polyethylene
SJO: Same as SJ, but carolprene, oil-resistant compound outer jacket. Can also be made "water-resistant." 300V, 60°C.	TFF: Same as TF but flexible stranding. 60°C.	Z: Symbol for impedance
SJT: Junior hard service thermoplastic or rubber-insulated conductors with overall thermoplastic jacket, 300V, 60°C to 105°C.	THHN: 90°C, 600V nylon jacketed building wire	
SJTO: Same as SJT but oil-resistant thermoplastic outer jacket. 60°C.	THW: Thermoplastic vinyl-insulated building wire. Flame-retardant, moisture- and heat-resistant. 75°C. Dry and wet locations.	
SMTP: Simple Mail Transfer Protocol	THWN: Same as THW but with nylon jacket overall. 75°C.	
SNA: Systems Network Architecture	TIA: Telecommunications Industry Association	
SNM: Shielded Non Metallic Sheathed Cable, NEC Article 337 Cable Designation	TOC: Tin Overcoat	
SNMP: Simple Network Management Protocol	TP: Transport Protocol	
SNR: Signal to Noise Ratio		
SO: Hard-service cord, same construction as type S except oil-resistant carolprene jacket, 600V, 60° to 90°C.		
SONET: Synchronous Optical Network		
SP-1: All rubber, parallel-jacketed, two-conductor light-duty cord for pendant or portable use in damp locations. 300V.		

Hook-Up Wire Product Finder

TEMP. °C	VOLTAGE	UL	UL	CSA	MIL	AWG	P/N	STRAND TYPE	PAGE
60	1500*	—	—	—	—	20	C1326	STRANDED	147
60	3000*	—	—	—	—	20	C1319	STRANDED	147
60	5000*	—	—	—	—	18	C1320A	STRANDED	147
60	5000*	—	—	—	—	18	C1321	STRANDED	147
60	10000*	—	—	—	—	18	C1318	STRANDED	147
80/105	300	1007	1569	TR-64	—	24	C2003A	SOLID	143
80/105	300	1007	1569	TR-64	—	24	C2015A	STRANDED	143
80/105	300	1007	1569	TR-64	—	22	C2004A	SOLID	143
80/105	300	1007	1569	TR-64	—	22	C2016A	STRANDED	143
80/105	300	1007	1569	TR-64	—	20	C2028A	SOLID	143
80/105	300	1007	1569	TR-64	—	20	C2040A	STRANDED	143
80/105	300	1007	1569	TR-64	—	18	C2052A	SOLID	143
80/105	300	1007	1569	TR-64	—	18	C2064A	STRANDED	143
80/105	300	1007	1569	TR-64	—	16	C2053A	SOLID	143
80/105	300	1007	1569	TR-64	—	16	C2065A	STRANDED	143
105	600	1015	—	TEW	—	24	C2100A	STRANDED	144
105	600	1015	—	TEW	—	22	C2101A	STRANDED	144
105	600	1015	—	TEW	—	22	C2117A	SOLID	144
105	600	1015	—	TEW	—	20	C2102A	STRANDED	144
105	600	1015	—	TEW	—	20	C2118A	SOLID	144
105	600	1015	—	TEW	—	18	C2103A	STRANDED	144
105	600	1015	—	TEW	—	18	C2119A	SOLID	144
105	600	1015	—	TEW	—	16	C2104A	STRANDED	144
105	600	1015	—	TEW	—	14	C2105A	STRANDED	144
105	600	1015	—	TEW	—	12	C2106A	STRANDED	144
105	600	1015	—	TEW	—	10	C2107A	STRANDED	144

* For intermittent duty only

Multi-Conductor Cable Product Finder

NO. COND.	STRAND TYPE	AWG 24		AWG 22		AWG 20		AWG 18		AWG 16		AWG 14		AWG 12	
		P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE
2	Solid			C2515A F15 C4167A F19 C2676A B25 E1482S U81 E2482S F83 E3482S U-P85 E3542S F-P88 E1000S U89, 98 E2000S F90, 99 E3000S U-P 86, 100 E2100S F-P . 87, 101		C4311A U2		C3110 U-P9 C3060 F-P18 E2402S U81 E1502S U81 C4304A U82 E2502S F83 C4334A F84 E3502S U-P85 E3602S F-P 88 C0471 U91 C0472 F92 C3240 U-P93 C3167 F-P94 E1030S U89, 98 E2030S F90, 99 E3030S U-P 86, 100 E2200S F-P . 87, 101		E2404S U81 E1512S U81 C4321A U82 E2522S F83 C4344A F84 E3512S U-P85 E3612S F-P 88 C0473 U91 C0474 F92 C3241 U-P93 C3169 F-P94		E2406S U81 E1522S U81 C4324A U82 E2532S F83 C4347A F84 E3522S U-P85 E3622S F-P 88 C0491 U91 C0475 F92 C3244 U-P93 C3172 F-P94		E1532S U81 C4327A U82 E2542S F83 C4348A F84 E3532S U-P85 E3632S F-P 88 C0492 U91 C0476 F92 C3246 U-P93 C3174 F-P94	
	Stranded	C2461A U 4 C2513A F15 C4152A F19 C4216A F21 C0740A F 45	C6348A U5 C3105 U-P8 C3115 U-P9 C4100A U12 C0431A U14 C2514A F15 C2516A F15 C2518A F16 C2520A F16 C3158 F-P18 C4153A F19 C4168A F19 C4192A F20 C4210A F20 C0450A F23 C2882A S24 C2677A B25 C2679A B27 C6700A U13 C0760A F46 E1002S U89, 98 E2002S F89, 99 E3002S U-P 86, 100 E2102S F-P . 87, 101 C6892A F 22 C6810A F 22	C6351A U6 C4117A U10 C0433A U14 C2524A F15 C2540A F15 C2519A F16 C4154A F19 C4166A F20 C4211A F20 C0452A F23 C2888A S24 C1642A B26 C2681A B27 C3602 U-R29 C1302 B-R30 C6717A U13 C0780A F46 E1022S U89, 98 E2022S F90, 99 E3022S U-P 86, 100 E2122S F-P . 87, 101 C6866A F 22 C6811A F 22	C2830A U6 C3102 U-P8 C3112 U-P9 C4125A U10 C4214A U10 C0435A U14 C2534A F15 C2521A F16 C3062 F-P18 C4155A F19 C4197A F20 C4212A F20 C0454A F23 C2892A S24 C2686A B27 C1202 B-C31, 138 C6725A U13 C6714A U13 E1032S U89, 98 E2032S F90, 99 E3032S U-P 86, 100 E2202S F-P . 87, 101 C6897A F 22 C6812A F 22	C2405A U7 C3193 U-P8 C3127 U-P9 C4135A U11 C0437A U14 C2536A F15 C3169 F-P94 C3068 F-P18 C4162A F19 C4199A F20 C4213A F20 C0456A F23 C2895A S24 C2689A B27 C1602 B-C31, 138 C6735A U13 E1042S U89, 98 E2042S F90, 99 E3042S U-P 86, 100 E2242S F-P . 87, 101 C6899A F 22 C6813A F 22	C2409A U7 C3126 U-P8 C3128 U-P9 C4146A U11 C0439A U14 C2538A F15 C4163A F19 C4201A F20 C4154A F20 C0458A F23 C6746A U13 E1052S U89, 98 E2052S F90, 99 E3052S U-P 86, 100 E2252S F-P . 87, 101 C6801A F 22 C6815A F 22	C2410A U7 C3135 U-P8 C3129 U-P9 C4150A U11 C0441A U14 C2539A F15 C4164A F19 C4202A F20 C0460A F23 E1062S U89, 98 E2062S F90, 99 E3062S U-P 86, 100 E2262S F-P . 87, 101							
3	Solid						C3114 U-P9 E1503S U81 C4305A U82 E2503S F83 C4335A F84 E3503S U-P85 E3603S F-P88		C4322A U82 C4345A F84		C4325A U82				
	Stranded	C2462A U 4 C4217A F21 C0741A F45 C0951A FB47 C0680A FB49	C4062A U5 C4101A U12 C0432A U14 C2526A F15 C2517A F15 C4156A F19 C4169A F19 C4193A F20 C0451A F23 C1335A S24 C2678A B27 C6701A U13 C0761A F46 C0971A FB48 E1003S U89, 98 E2003S F90, 99 E3003S U-P 86, 100 E2103S F-P . 87, 101 C6893A F 22	C6352A U6 C4118A U10 C0434A U14 C2528A F15 C2525A F15 C4157A F19 C4158A F19 C4195A F20 C0453A F23 C1643A B26 C1332A B27 C3603 U-R29 C1304 B-R30 C0781A F46 E1023S U89, 98 E2023S F90, 99 E3023S U-P 86, 100 E2123S F-P . 87, 101	C2831A U6 C3190 U-P8 C3120 U-P9 C4126A U10 C0436A U14 C2535A F15 C3064 F-P18 C4159A F19 C4198A F20 C0455A F23 C2768A S24 C2687A B27 C1203 B-C31 C6726A U13 E1033S U89, 98 E2033S F90, 99 E3033S U-P 86, 100 E2203S F-P . 87, 101 C6898A F 22	C2406A U7 C3194 U-P8 C4136A U11 C0438A U14 C4200A F20 C0457A F23 C1603 B-C31 C6736A U13 E1043S U89, 98 E2043S F90, 99 E3043S U-P 86, 100 E2243S F-P . 87, 101 C6800A F 22	C0440A U14 C0459A F23								

B - Braid Shield
 C - Carolprene®
 F - Foil Shield
 FB - Foil + Braid Shield
 I - Individual Foil Shield
 IFB - Individual Foil + Braid Shield
 P - Plenum
 R - Rubber
 S - Spiral Shield
 U - Unshielded



Multi-Conductor Cable Product Finder

NO. COND.	STRAND TYPE	AWG 24		AWG 22		AWG 20		AWG 18		AWG 16		AWG 14		AWG 12	
		P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE
4	Solid			E1484S U 81 E2484S F 83 E3484S U-P 85 E1001S U 89, 98 E3001S U-P 86, 100				C3111 U-P 9 C3061 F-P 18 E1504S U 81 C4306A U 82 E2504S F 83 C4336A F 84 E3504S U-P 85 E3604S F-P 88 C0485 U 91 C0494 F 92 C3242 U-P 93 C3170 F-P 94	E1514S U 81 C4323A U 82 E2524S F 83 C4346A F 84 E3514S U-P 85 E3614S F-P 88 C0486 U 91 C0495 F 92 C3243 U-P 93 C3171 F-P 94	E1524S U 81 C4326A U 82 E2534S F 83 E3524S U-P 85 E3624S F-P 88 C0496 F 92 C3245 U-P 93 C3173 F-P 94	E1534S U 81 E2544S F 83 E3534S U-P 85 E3634S F-P 88 C0497 F 92 C3247 U-P 93 C3175 F-P 94				
	Stranded	C2463A U 4 C4218A F 21 C0742A F 45 C0952A FB 47 C0681A FB 49	C3159 F-P 18 C4160A F 19 C4194A F 20 C1337A S 24 C2680A B 27 C6702A U 13 C0762A F 46 C0972A FB 48 E1004S U 89, 98 E2004S F 90, 99 E3004S U-P 86, 100 E2104S F-P . 87, 101 C4063A U 5 C3106 U-P 8 C3116 U-P 9 C4102A U 12 C2523A F 15 C6894A F 22	C6353A U 6 C4119A U 10 C2555A F 15 C4161A F 19 C4196A F 20 C1644A B 26 C2683A B 27 C3604 U-R 29 C1305 B-R 30 C6718A U 13 C0782A F 46 E1024S U 89, 98 E2024S F 90, 99 E3024S U-P 86, 100 E2124S F-P . 87, 101 C6896A F 22	C2404A U 6 C3103 U-P 9 C3113 U-P 10 C4127A U 11 C0444A U 15 C2543A F 18 C8114 F-P 19 C3063 F-P 20 C4204A F 22 C2688A B 29 C8110 FB-P 32 C6727A U 14 E1034S U 91, 100 E2034S F 92, 101 E3034S U-P 88, 102 E2204S F-P 89, 103 C6804A F 24	C2425A U 7 C3195 U-P 8 C4137A U 11 C1604 B-C 31 C6737A U 13 E1044S U 89, 98 E2044S F 90, 99 E3044S U-P 86, 100 E2254S F-P . 87, 101	C2430A U 7 C4147A U 11 C6747A U 13 E1054S U 89, 98 E2054S F 90, 99 E3054S U-P 86, 100 E2264S F-P . 87, 101	C2440A U 7 C4151A U 11 E1064S U 89, 98 E2064S F 90, 99 E3064S U-P 86, 100 E2264S F-P . 87, 101							
5	Solid							C3117 U-P 9 E1505S U 81 C4307A U 82 C4337A F 84	C4349A U 82 C4350A F 84						
	Stranded	C2464A U 4 C4219A F 21 C0753A F 45 C0953A FB 47 C0682A FB 49	C4064A U 5 C4103A U 12 C0973A FB 48	C6355A U 6 C4120A U 10 C1645A B 26	C2420A U 6 C3134 U-P 8 C3125 U-P 9 C4128A U 10	C2434A U 7 C4138A U 11	C2437A U 7 C4148A U 11								
6	Solid			E1486S U 81 C4300A U 82			C3118 U-P 9 E1506S U 81 C4308A U 82 E2506S F 83 C4338A F 84 E3506S U-P 85 E3606S F-P 88								
	Stranded	C2466A U 4 C4220A F 21 C0743A F 46 C0954A FB 47 C0683A FB 49	C4066A U 5 C4104A U 12 C4207A F 20 C1341A S 24 C6704A U 13 C0763A F 46 C0974A FB 48 E1006S U 89, 98 E2006S F 90, 99 E3006S U-P 86, 100 E2106S F-P . 87, 101 C6807A F 22	C1646A B 26 C4120A U-R 29 C1310 B-R 30 C0783A F 46	C3192 U-P 8 C3121 U-P 9 C4206A U 10 C3065 F-P 18 C4205A F 20 C1206 B-C 31 C6706A U 13 E1036S U 89, 98 E2036S F 90, 99 E3036S U-P 86, 100 E2206S F-P . 87, 101 C6805A F 22										
7	Solid						C4309A U 82 C4339A F 84								
	Stranded	C2488A U 4 C4221A F 21 C0754A F 45 C0955A FB 47 C0684A FB 49	C4088A U 5 C4105A U 12 C0975A FB 48	C6356A U 6 C4121A U 10 C3607 U-R 29 C1312 B-R 30	C2421A U 6 C4129A U 10	C2426A U 7 C4139A U 11	C2431A U 7 C4149A U 11								

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I - Individual Foil Shield
IFB - Individual Foil + Braid Shield
P - Plenum
R - Rubber
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Multi-Conductor Cable Product Finder

NO. COND.	STRAND TYPE	AWG 24		AWG 22		AWG 20		AWG 18		AWG 16		AWG 14		AWG 12	
		P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE	P/N	SHIELD PAGE
8	Solid							C3119 U-P.....9 E1508S U.....81 C4310A U.....82 E2508S F.....83 C4340A F.....84							
	Stranded	C2465A U.....4 C4222A F.....21 C0744A F.....45 C0956A FB.....47 C0685A FB.....49	C4065A U.....5 C4106A U.....12 C4208A F.....20 C0764A F.....46 C0976A FB.....48 E1008S U.....89,98 E2008S F.....90,99 E3008S U-P 86,100 E2108S F-P.. 87,101	C1648A FB.....28 C3608 U-R.....29 C1313 B-R.....30 C0784A F.....46	C3191 U-P.....8 C3122 U-P.....9	C2443A U.....7 C4140A U.....11									
9	Solid							C4312A U.....82 C4341A F.....84							
	Stranded	C2470A U.....4 C4223A F.....21 C0755A F.....45 C0957A FB.....47 C0686A FB.....49	C4070A U.....5 C4107A U.....12 C0977A FB.....48	C6357A U.....6 C4122A U.....10	C2422A U.....6 C4130A U.....10	C2435A U.....7 C4141A U.....11									
10	Solid							C4313A U.....82 C4342A F.....84							
	Stranded	C2471A U.....4 C4224A F.....21 C0745A F.....45 C0958A FB.....47 C0687A FB.....49	C4071A U.....5 C4108A U.....12 C0765A F.....46 C0978A FB.....48 E1010S U.....89,98 E2010S F.....90,99 E3010S U-P 86,100 E2110S F-P.. 87,101	C3610 U-R.....29 C0785A F.....46	C3178 U-P.....8 C3123 U-P.....9 C3183 F-P.....18 E1040S U.....89,98 E2040S F.....90,99										
11	Solid							C4314A U.....82							
12	Stranded	C2467A U.....4	C4067A U.....5 C4109A U.....12 E1012S U.....89,98 E2012S F.....90,99 E3012S U-P 86,100 E2112S F-P.. 87,101	C6360A U.....6 C4123A U.....10	C2412A U.....6 C3179 U-P.....8 C3124 U-P.....9 C4131A U.....10 C3184 F-P.....18 E1041S U.....89,98 E2041S F.....90,99	C2427A U.....7 C4142A U.....11									
15	Solid		C4301A U.....82												
	Stranded	C2473A U.....4 C4225A F.....21 C0746A F.....45 C0959A FB.....47 C0688A FB.....49	C4073A U.....5 C4110A U.....12 C0766A F.....46 C0979A FB.....48 C4111A U.....12	C6358A U.....6 C4124A U.....10 C0786A F.....46	C2423A U.....6 C4132A U.....10	C2428A U.....7 C4143A U.....11									
19	Solid							C2424A U.....6							
	Stranded							C4133A U.....10	C2429A U.....7 C4144A U.....11						
20	Solid		C4302A U.....82					C4316A U.....82							
	Stranded	C4226A F.....21 C0747A F.....45 C0960A FB.....47	C4075A U.....5 C4112A U.....12 C0767A F.....46 C0980A FB.....48												
21	Solid							C4317A U.....82							
25	Solid														
	Stranded	C4227A F.....21 C0748A F.....45 C0961A FB.....47	C4076A U.....5 C4113A U.....12 C0768A F.....46 C0981A FB.....48	C0787A F.....46 C0788A F.....46	C2433A U.....6 C4134A U.....10	C2436A U.....7 C4145A U.....11									
27	Solid														
	Stranded														
30	Solid							C4318A U.....82 C4343A F.....84							
	Stranded	C4228A F.....21 C0749A F.....45	C4077A U.....5 C4114A U.....12												
40	Solid														
	Stranded	C4229A F.....21 C0750A F.....45	C4078A U.....5 C4115A U.....12												
50	Solid														
	Stranded	C4230A F.....21 C0751A F.....45	C4079A U.....5 C4116A U.....12												

B - Braid Shield
 C - Carolprene®
 F - Foil Shield
 FB - Foil + Braid Shield
 I - Individual Foil Shield
 IFB - Individual Foil + Braid Shield
 P - Plenum
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 U - Unshielded



Multi-Conductor Cable Product Finder

NO. PAIR	STRAND TYPE	AWG 28		AWG 24		AWG 22		AWG 20		AWG 18	
		P/N SHIELD	PAGE	P/N SHIELD	PAGE	P/N SHIELD	PAGE	P/N SHIELD	PAGE	P/N SHIELD	PAGE
1	SOLID					C4008A U.....	34				
	STRANDED			C4170A F.....	38	C7104A F.....	36			C6101A U.....	35
2	SOLID					C4010A U.....	34				
	STRANDED			C3150 F-P.....	37	C6010A U.....	34	C7106A I.....	40	C6118A U.....	35
3	SOLID					C4014A U.....	34				
	STRANDED			C3153 F-P.....	37	C6014A U.....	34	C6052A I.....	56	C6103A U.....	35
4	SOLID					C4015A U.....	34				
	STRANDED			C3151 F-P.....	37	C6015A U.....	34			C6119A U.....	35
4.5	Solid										
	Stranded										
5	Solid									C3120 U.....	9
	Stranded			C4174A F.....	38	C4187A F.....	39				

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NO. PAIR	STRAND TYPE	AWG 28		AWG 24		AWG 22		AWG 20		AWG 18	
		P/N SHIELD	PAGE	P/N SHIELD	PAGE	P/N SHIELD	PAGE	P/N SHIELD	PAGE	P/N SHIELD	PAGE
6	Solid					C4017A U 34 C1671A F 36					
	Stranded			C3165 F-P 37 C4175A F 38 C0605A F 50 C0899A F 51 C0624A FB 52 C0839A FB 54 C0519A FB 55 C0606A I 56 C0913A I 57		C6017A U 34 C3208 F-P 37 C4188A F 39 C0573A I 42 C0553A F 43 C0725A F 50 C0654A FB 52 C6041A I 56		C6053A I 56		C6106A U 35 C0587A I 42 C0563A F 43 C6048A I 56	
7	Solid										
	Stranded			C4176A F 38 C0606A F 50 C0625A FB 52 C0833A FB 54 C0520A FB 55		C0655A FB 52					
8	Solid										
	Stranded			C4177A F 38 C0607A F 50 C0626A FB 52 C0521A FB 55		C0656A FB 52				C6121A U 35	
9	Solid					C1672A F 36					
	Stranded			C4178A F 38 C0608A F 50 C0896A F 51 C0607A I 56 C0914A I 57		C6019A U 34 C4189A F 39 C0574A I 42 C0554A F 43 C0726A F 50 C6042A I 56		C6054A I 56		C6109A U 35 C0588A I 42 C0564A F 43 C6049A I 56	
10	Solid										
	Stranded			C4179A F 38 C0609A F 50 C0628A FB 52 C0835A FB 54 C0522A FB 55		C0658A FB 52					
11	Solid										
	Stranded			C0915A I 57		C0575A I 42 C0555A F 43 C6043A I 56				C0589A I 42	
12	Solid										
	Stranded			C0836A FB 54 C0916A I 57		C6023A U 34 C6059A I 56		C6056A I 56		C6050A I 56	
12.5	Solid										
	Stranded			C3152 F-P 37 C0897A F 51 C0630A FB 52 C0523A FB 55		C0660A FB 52					
15	Solid					C1673A F 36					
	Stranded			C4180A F 38 C0610A F 50 C0524A FB 55 C0917A I 57		C6026A U 34 C4190A F 39 C0556A F 43 C0728A F 50 C6044A I 56		C6058A I 56		C6111A U 35 C0590A I 42 C0566A F 43 C6051A I 56	

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Multi-Conductor Cable Product Finder

NO. PAIR	STRAND TYPE	AWG 28		AWG 24		AWG 22		AWG 20		AWG 18	
		P/N SHIELD	PAGE	P/N SHIELD	PAGE	P/N SHIELD	PAGE	P/N SHIELD	PAGE	P/N SHIELD	PAGE
17	Solid										
	Stranded					C6060A I.....56					
18	Solid										
	Stranded			C0525A FB.....55							
19	Solid										
	Stranded			C4181A F.....38 C0611A F.....50		C0729A F.....50 C6045A I.....56					
25	Solid										
	Stranded			C4182A F.....38 C0612A F.....50 C0526A FB.....55		C0663A FB.....52					
27	Solid										
	Stranded					C0730A F.....50 C6046A I.....56					
51	Solid										
	Stranded										

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CAROL® Electronics Cable

CAROL to Belden Cross-Reference Guide



Communication and Control Cable – New 105°C Rating

Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL
1883A	C0600A	8444	C4063A	8477	C2410A	9302	C1670A	9502	C0601A	9540	C0745A
5541FE	C0721A	8445	C4064A	8489	C2404A	9406	C1350A	9503	C0602A	9541	C0746A
8205	C6351	8456	C4071A	8619	C2424A	9418	C2543A	9504	C0603A	9542	C0747A
8302	C0650A	8458	C4073A	8620	C2425A	9423	C4070A	9505	C0604A	9543	C0748A
8303	C0651A	8459	C4076A	8621	C2426A	9430	C4088A	9506	C0605A	9626	C2433A
8304	C0652A	8465	C2420A	8622	C2427A	9431	C4075A	9533	C0741A	9740	C6101A
8306	C0654A	8466	C2412A	8627	C2430A	9432	C4077A	9534	C0742A	9744	C6010A
8332	C0620A	8467	C2421A	8690	C6103A	9444	C6353A	9535	C0753A	9939	C0971A
8335	C0623A	8468	C2423A	8691	C6106A	9445	C6355A	9536	C0743A	9940	C0972A
8441	C2677A	8469	C2422A	8740	C4008A	9455	C6357A	9537	C0754A		
8442	C6348A	8471	C2405A	8780	C2895A	9457	C6360A	9538	C0744A		
8443	C4062A	8473	C2409A	9156	C6118	9458	C6358A	9539	C0755A		

Communication and Control Cable

Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL
1266A	C2516A	8405	C1645A	8772	C2528A	9369	C0585A	9544	C0749A	9829	C0829A
3107A	C7114A	8446	C4081	8773	C6046A	9388	C0586A	9545	C0750A	9841	C4841A
3108A	C7116A	8447	C4082A	8774	C6042A	9389	C0587A	9546	C0751A	9842	C4842A
5120FJ	C0475	8448	C4083A	8775	C6043A	9390	C0588A	9608	C0951A	9843	C4843A
5220FJ	C0474	8449	C4084A	8776	C6044A	9407	C0431A	9609	C0952A	9844	C4844A
5545FE	C0725A	8450	C2515A	87760	C8104	9408	C0433A	9610	C0953A	9855	C8004
6000UC	C3129	8451	C2516A	87761	C8103	9409	C0435A	9611	C0954A	9873	C6052A
6100UF	C3128	8457	C4067A	8777	C6040A	9410	C0437A	9621	C2435A	9874	C6053A
6220FK	C3168	8486	C2754A	8778	C6041A	9411	C0439A	9622	C2436A	9875	C6054A
8162	C0924A	8487	C2755A	8790	C2892A	9412	C0441A	9681	C0616A	9877	C6056A
8163	C0925A	8623	C2428A	8791	C2768A	9421	C4065A	9682	C0617A	9879	C6058A
8164	C0926A	8624	C2429A	88102	C8118	9433	C4078A	9683	C0618A	9925	C0680A
82503	C8113	8628	C2431A	88723	C8112	9434	C4079A	9684	C0619A	9927	C0681A
82641	C8127	8641	C2513A	88760	C8101	9451	C2520A	9696	C8006	9929	C0682A
82723	C8105	8692	C6109A	88761	C8109	9451P	C8124	9721	C2443A	9931	C0683A
82729	C8134	8718	C2539A	88778	C8132	9460	C2521A	9728	C0912A	9932	C0684A
82740	C8122	8719	C2536A	89418	C8114	9461	C2518A	9729	C0910A	9933	C0685A
82760	C8123	8720	C2538A	89729	C8128	9462	C7104A	9730	C0911A	9934	C0686A
82761	C8126	8723	C1352A	89740	C8116	9464	C2519A	9731	C0913A	9935	C0687A
82777	C8131	8725	C1368A	89841	C8117	9491	C0432A	9732	C0914A	9936	C0688A
82778	C8133	8728	C1353A	9157	C6119	9492	C0432A	9733	C0915A	9947	C0979A
8305	C0653A	8729	C7110A	9159	C6120	9493	C0436A	9735	C0917A	9990	C6065A
8307	C0655A	8735	C2678A	9161	C6121	9494	C0438A	9745	C6014A	9991	C6066A
8308	C0566A	8737	C2882A	9305	C1676A	9495	C0440A	9746	C6015A	9992	C6067A
8310	C0658	8741	C4010A	9306	C1671A	9501	C0600A	9768	C6059A		
8312	C0660A	8742	C4014A	9309	C1672A	9507	C0606A	9773	C6047A		
8307	C0655A	8747	C6017A	9315	C1673A	9508	C0607A	9774	C6048A		
8308	C0566A	8751	C6451A	9328	C0570A	9509	C0608A	9775	C6049A		
8310	C0658	8757	C4015A	9329	C0571A	9510	C0609A	9776	C6050A		
8312	C0660A	8760	C2534A	9330	C0572A	9512	C0550A	9777	C6051A		
8333	C0621A	8761	C2514A	9331	C0573A	9513	C0551A	9791	C0533A		
8334	C0622A	8762	C2524A	9363	C0451A	9514	C0552A	9804	C0804A		
8336	C0624A	8767	C6035A	9364	C0453A	9515	C0610A	9805	C0805A		
8337	C0625A	8768	C6036A	9365	C0455A	9516	C0553A	9806	C0806A		
8340	C0628A	8769	C6045A	9366	C0457A	9519	C0611A	9807	C0807A		
8342	C0630A	8770	C2535A	9367	C0459A	9520	C0554A	9808	C0808A		
83654	C8110	8771	C2526A	9368	C0584A	9525	C0612A	9812	C0812A		

CAROL® Electronics Cable

CAROL to Belden Cross-Reference Guide



Alarm and Security, Fire Alarm and Coaxial Cable – New 105°C Rating

Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL
5000FE	E2062S	5122UL	E1524S	5222UL	E1514S	5322FL	E2504S	5501FE	E2003S	5509FE	E2012S
5020FL	E2542S	5200FE	E2042S	5300FE	E2032S	5322UL	E1504S	5501UE	E1003S	5509UE	E1012S
5020UL	E1532S	5200UE	E1042S	5300UE	E1032S	5400FE	E2022S	5502FE	E2004S	5520UE	E1000S
5100FE	E2052S	5201FE	E2043S	5301FE	E2033S	5401FE	E2023S	5502UE	E1004S	5522UE	E1001S
5100UE	E1052S	5202FE	E2044S	5302FE	E2034S	5402FE	E2024S	5504FE	E2006S		
5102A	E1054S	5202UL	E1044S	5302UE	E1034S	5402UE	E1024S	5504UE	E1006S		
5120FL	E2532S	5220FL	E2522S	5304UE	E1036S	5400UE	E1022S	5506FE	E2008S		
5120UL	E1522S	5220UL	E1512S	5320FL	E2502S	5500FE	E2002S	5506UE	E1008S		
5122FL	E2534S	5222FL	E2524S	5320UL	E1502S	5500UE	E1002S	5508FE	E2010S		

Alarm and Security, Fire Alarm and Coaxial Cable

Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL	Belden	CAROL
1186A	C5784	51394S	395058	6102UE	E3054S	6400FE	E2122S	8213	C5025	9116	C5775
1189A	C5785	5201UE	E1043S	6120FL	E3622S	6400UE	E3022S	8214	C1198	9117	C5802
1190A	C5804	5202UE	E1044S	6120UL	E3522S	6401FE	E2123S	8215	C5810	9141	C5838
1223A	C5812	5220LL	E2404S	6122UL	E3524S	6401UE	E3023S	8216	C1156	9182	C8014
1242A	E1001S	5301UE	E1033S	6220FL	E3612S	6402FE	E2124S	8218	C1158	9201	C1117
1266A	E2022S	5308UE	E1040S	6220UL	E3512S	6402UE	E3024S	8219	C1188	9243	C5782
1322R	C5889	5320FE	E2030S	6222FL	E3614S	6500FE	E2102S	8221	C1135	9244	C5836
1426A	C1142	5320LL	E2402S	6222UL	E3514S	6500UE	E3002S	82262	C3520	9259	C1103
1513A	C5776	5320UE	E1030S	6300FE	E2202S	6501FE	E2103S	8228	C5760	9265	C8025
1523A	C5039	5321FL	E2503S	6300UE	E3032S	6501UE	E3003S	8233	C5027	9269	C1164
1524A	C5041	5321UL	E1503S	6301FE	E2203S	6502FE	E2104S	8237	C1154	9271	C8012
1530A	C5776	5324UL	E1506S	6302FE	E2204S	6502UE	E3004S	82442	E3002S	9275	C5780
1613A	C5812	5339Q5	395014	6304FE	E2206S	6504FE	E2106S	8259	C1178	9291	C5770
1617A	C5044	53994S	C8029	6306FE	E2208S	6504UE	E3006S	8261	C1160	9463	C8001
1829A	C5775	539949	C8029	6320FE	E2200S	6506FE	E2108S	8263	C1106	9860	C8013
1840A	C5826	5401UE	E1023S	6320FL	E3602S	6506UE	E3008S	8267	C1176	9862	C1162
1841A	C5822	5508UE	E1010S	6320UE	E3030S	6509UE	E3012S	8281B	C5816	9863	C8000
1846A	C5853	5520FE	E2000S	6320UL	E3502S	6520FE	E2100S	9011	C5034	9907	C5779
1847A	C5856	6000UE	E3062S	6321FL	E3503S	6520UE	E3000S	9066	C5804	9913	C1180
5000UE	E1062S	6020FL	E3632S	6321UL	E3604S	6522UE	E3001S	9067	C5844	9999	C8033
5002UE	E1064S	6020UL	E3532S	6322FL	E3604S	6522UL	E3482S	9100	C5780		
5102UE	E1054S	6100FE	E2252S	6322UL	E3504S	7999A	C5044	9106	C5834		
5120LL	E2406S	6100UE	E3052S	6324UL	E3506S	8212	C1102	9108	C5832		

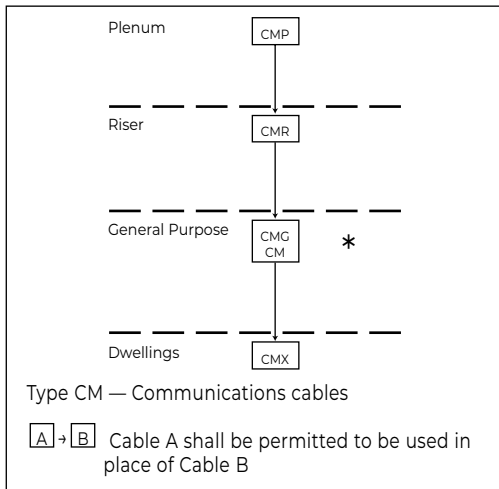
This cross-reference guide should be used in conjunction with the product information contained in our catalog or Website. It should be used for suggested alternative items, which are functionally equal. Constructional differences are not indicated. Prysmian Group is not responsible for variances due to competitor and industry constructional changes or agency updates.

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NEC/CEC Substitution Chart

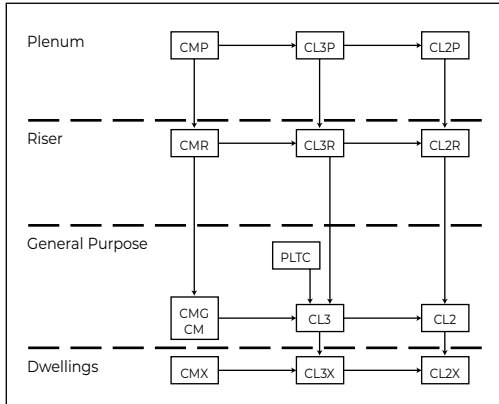
Communication wire and cable for premise installations in accordance with Article 800, and other applicable parts of the National Electrical Code (NEC), latest issue. Communication wire and cables for Canada are in accordance with the harmonized Canadian Standard Association C22.2 No. 214, Underwriters Laboratories UL 444, latest issue.

Figure 800-154(E) Cable Substitution Hierarchy



*CMG can be substituted for CM—CM can NOT be substituted for CMG

Figure 725-154(G), Cable Substitution Hierarchy



Type CM — Communications wires and cables
 Type CL2 and CL3 — Class 2 and Class 3 remote-control, signaling and power-limited cables
 Type PLTC — Power-limited tray cable

A → B Cable A shall be permitted to be used in place of Cable B

FIRE RESISTANCE LEVEL	TEST REQUIREMENT	NEC ARTICLE			
		800	725	760	820
(Highest) Plenum Cables	NFPA 262 (Steiner Tunnel) CSA-CMP (Steiner Tunnel)	CMP	CL3P CL2P	FPLP	CATVP
Riser Cables	UL-1666 (Vertical Shaft)	CMR	CL3R CL2R	FPLR	CATVR
General-Purpose Cables Multiple Floors	UL-1581 (Vertical Tray) CSA-CMG (Vertical Tray)	CMG CM	CL3	FPL	CATV
(Lowest) Residential Cables Restricted Use	UL-1581 VW-1	CMX	CL2 CL3X		CATVX

Notes: 1. Cables with a higher fire resistance level may be substituted for those with a lower fire resistance level.
 2. Non-fire rated outside plant telephone cables may not run outside of a rigid metal conduit more than 50 feet from the point of entrance into a building.
 3. Cables rated cmg or cm may be used in runs penetrating one floor. (nec 800-53)

ARTICLE 800

Table 800-154(E). Cable Uses and Permitted Substitutions

CABLE TYPE	USE	REFERENCE	PERMITTED SUBSTITUTIONS
CMP (FT6)	Communications plenum cable	800-154(a)	
CMR	Communications riser cable	800-154(b)	CMP
CMG (FT4) CM (FT1)	Communications general purpose cable	800-154(c)	CMP, CMR
CMX (FT1)	Communications cable, limited use	800-154(c)	CMP, CMR, CMG, CM

Note: See Figure 800-154(E), Cable Substitution Hierarchy

ARTICLE 725

Table 725-154(G). Cable Uses and Permitted Substitutions

CABLE TYPE	USE	REFERENCE	PERMITTED SUBSTITUTIONS
CL3P	Class 3 plenum cable	725-61(a)	CMP
CL2P	Class 2 plenum cable	725-61(b)	CMP, CL3P
CL3R	Class 3 riser cable	725-61(b)	CMP, CL3P, CMR
CL2R	Class 2 riser cable	725-6 (b)	CMP, CL3P, CL2P, CMR, CL3R
PLTC	Power-limited tray cable	725-61(c) and (d)	
CL3	Class 3 cable	725-61(b), (e) and (f)	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC
CL2	Class 2 cable	725-61(b), (c) and (f)	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG, CM, PLTC, CL3
CL3X	Class 3 cable, limited use	725-61(b) and (e)	CMP, CL3P, CMR, CL3R, CMG, CM, PLTC, CL3, CMX
CL2X	Class 2 cable, limited use	725-61(b) and (e)	CMP, CL3P, CL2P, CMR, CL3R, CL2R, CMG, CM, PLTC, CL3, CL2, CMX, CL3X

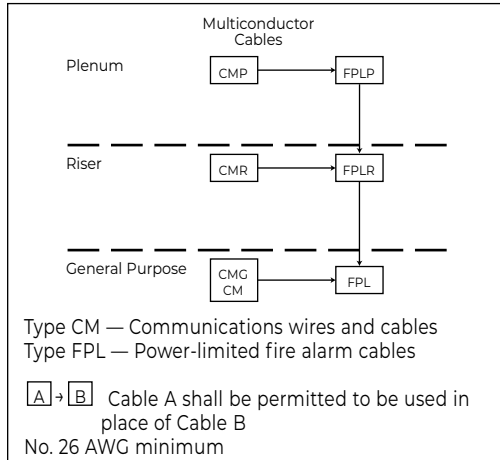
Note: See Figure 725-154(G), Cable Substitution Hierarchy

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NEC/CEC Substitution Chart

Figure 760-154 (D), Cable Substitution Hierarchy



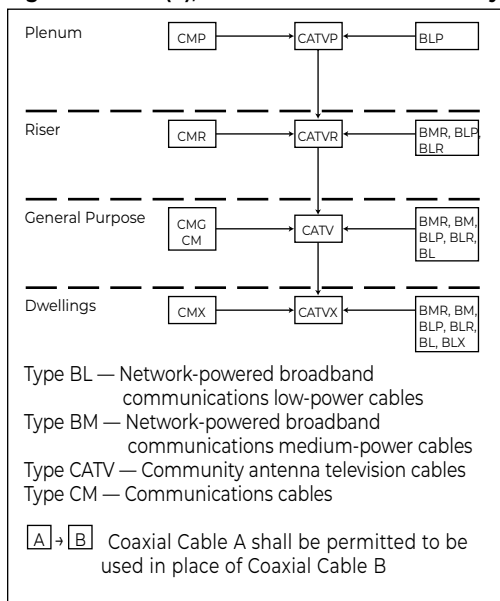
Article 760

Table 760-154 (D). Cable Uses and Permitted Substitutions

CABLE TYPE	USE	REFERENCES	PERMITTED SUBSTITUTIONS
			MULTICONDUCTOR
FPLP	Power-limited fire alarm plenum cable	760-154 (A)	CMP
FPLR	Power-limited fire alarm riser cable	760-154 (B)	CMP, FPLP, CMR
FPL	Power-limited fire alarm cable	760-154 (C)	CMP, FPLP, CMR, FPLR, CMG, CM

Note: See Figure 760-154 (D), Cable Substitution Hierarchy

Figure 820-154 (E), Cable Substitution Hierarchy



Article 820

Table 820-154 (E). Coaxial Cable Uses and Permitted Substitutions

CABLE TYPE	USE	REFERENCES	PERMITTED SUBSTITUTIONS
CATVP	Coaxial plenum cable	820-154 (A)	CMP, BLP
CATVR	Coaxial riser cable	820-154 (B)	CATVP, CMP, CMR, BMR, BLP, BLR
CATV	Coaxial general purpose cable	820-154 (C)	CATVP, CMP, CATVR, CMR, CMG, CM, BMR, BM, BLP, BLR, BL
CATVX	Coaxial cable, limited use	820-154 (C)	CATVP, CMP, CATVR, CMR, CATV, CMG, CM, BMR, BM, BLP, BLR, BL, BLX

Note: See Figure 820-154 (E), Cable Substitution Hierarchy

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Agency Symbols



UL Listed Mark for the United States



Canadian Standard Association CSA CMP



UL Listed Mark for Canada



Canadian Standard Association CSA CMG



UL Listed Mark for Canada and the United States



Canadian Standard Association CSA CMH



UL Recognized Component Mark for the United States



Underwriters Laboratories Inc. NFPA 262 and CSA FT6 Steiner Tunnel Fire Tests



TIA/EIA 568A Cat. 3



Underwriters Laboratories Inc. UL Vertical Tray Flame Test



TIA/EIA 568B Cat. 5e & Cat. 6



Underwriters Laboratories Inc. UL 1666 Riser Flame Test



RoHS Coliant Directive (EU) 2015/863



IMSA



ETL

Put-Ups and Color Codes

PUT-UP CODES

	PULL-PAC®	SPOOL-PAC®	SPOOL	REEL
100'	-	-	12	33
250'	-	-	15	35
500'	25	-	18	38
1000'	30	86	21	41
2000'	-	-	-	43
2500'	-	-	24	44
3000'	-	-	-	52
5000'	-	-	26	46

JACKET COLOR CODES

COLOR	ABBREVIATION	COLOR CODE
Black	BK	01
White	WH	02
Red	RD	03
Orange	OR	04
Yellow	YL	05
Green	GN	06
Blue	BL	07
Brown	BR	08
Gray	GY	10
Pink	PK	13
Light Blue	LB	16
Beige	BG	17
Purple	PU	19
Natural	NT	86
Clear	CL	90

Due to variances in monitors and printed materials, the colors above are only a representation of color and do not necessarily reflect the actual jacket color of the cable.