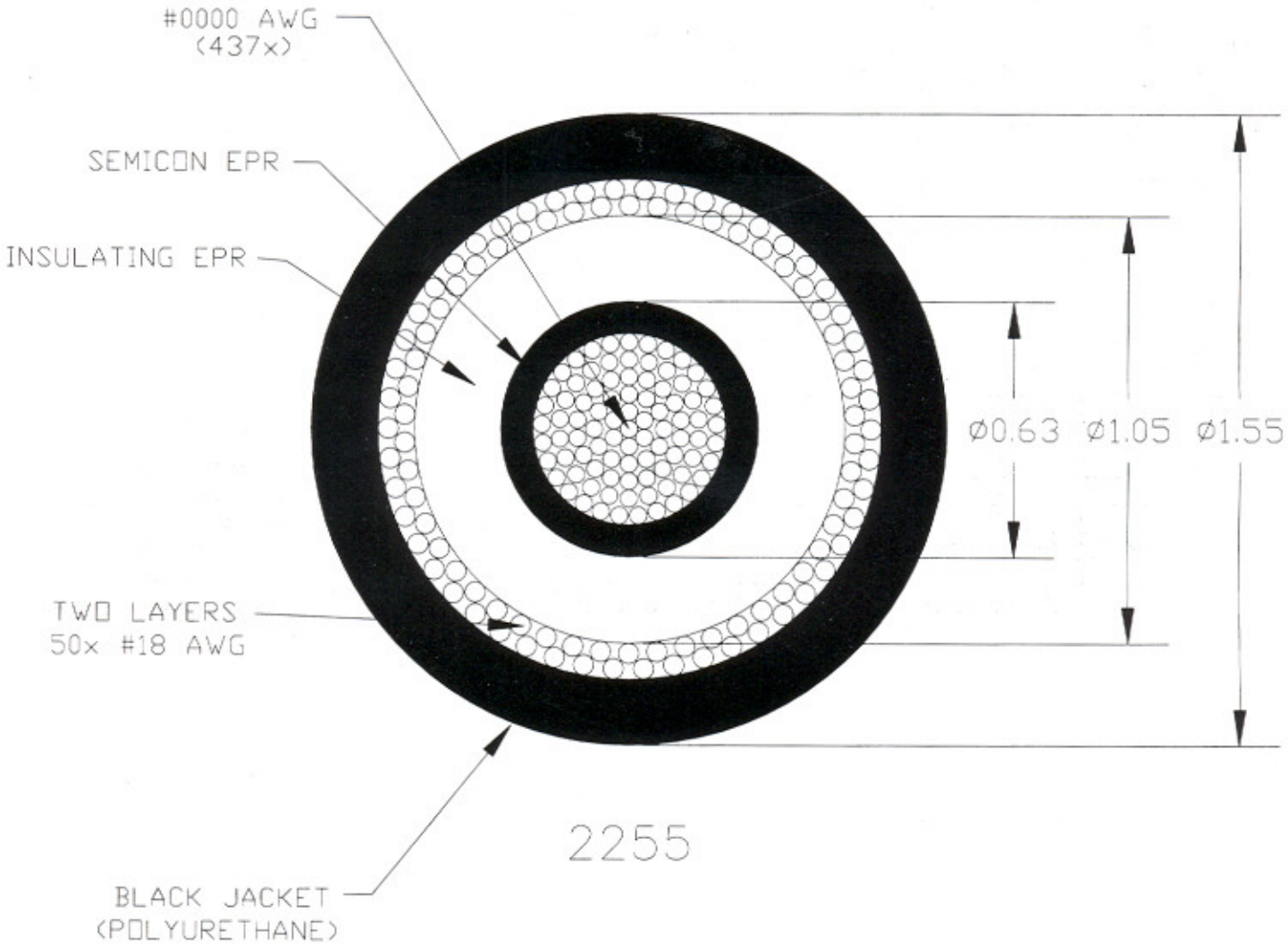


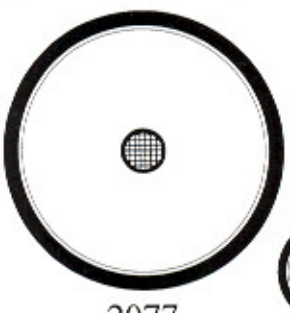
UNLESS OTHERWISE SPECIFIED	DRAWN D. A.	DATE	DIELECTRIC SCIENCES,INC
DIMENSIONS ARE IN INCHES TOLERANCE ON	CHECKED D. L.	DATE	CHELMSFORD, MASSACHUSETTS 01824
DECIMALS .XX .XXX / ANGLES ±	APPROVED	DATE	SHIELDED CABLE SPECIFICATIONS
	MATERIAL AS NOTED		SIZE A / FSCM NO. 50509 / DWG NO. 2100 / REV 1
	FINISH		SCALE / SHEET OF

HIGH VOLTAGE SHIELDED CABLE SPECIFICATIONS

VOLTAGE		PART	CONDUCTOR SIZE					SEMICON		DIELECTRIC INSULATION		
DC kV	AC kV	NUMBER	AWG	STRANDS	SQUARE mm	DIAMETER inches	DIAMETER cm	DIAMETER inches	DIAMETER cm	MATERIAL	DIAMETER inches	DIAMETER cm
10		2232	#6	133/27 TC	13.30	0.210	0.53	N/A	N/A	LDHMW PE	0.300	0.76
10		2164	#11	#30 BC braid	5.95	0.310	0.79	N/A	N/A	LDHMW PE	0.385	0.98
10		2167	#6	#30 BC braid	13.3	0.720	1.83	N/A	N/A	LDHMW PE	0.830	2.11
13	5	2075S_J	#12	19/25 SPC	3.31	0.090	0.23	0.135	0.34	Silicone	0.235	0.60
15		2139SVJ	#8	133/29 TC	8.37	0.166	0.42	N/A	N/A	Silicone	0.256	0.65
20		2168	#8	#33 BC braids	8.37	0.230	0.58	0.280	0.71	LDHMW PE	0.416	1.06
25		2157-R1	#2	#28 BC braids	33.62	0.680	1.73	N/A	N/A	LDHMW PE	0.927	2.35
25		2255	#0000	437x	108.90	0.609	1.55	0.630	1.60	EPR	1.050	2.67
25		2245	#11	#30 BC braid	4.00	0.370	0.94	N/A	N/A	LDHMW PE	0.490	1.24
25		2250	#6	#30 BC braid	13.50	0.600	1.52	N/A	N/A	LDHMW PE	0.930	2.36
30		2215STJ	#16	19/29 SPC	1.31	0.060	0.15	N/A	N/A	Silicone	0.275	0.70
40	15	2012S_J	#18	19/30 SPC	0.83	0.050	0.13	0.090	0.23	Silicone	0.235	0.60
50	17	2032S_J	#16	19/29 SPC	1.31	0.060	0.15	0.100	0.25	Silicone	0.295	0.75
50	17	2107	#1	259/25 TC	44.21	0.328	0.83	0.390	0.99	EPR	0.750	1.91
60	20	2024S_J	#12	19/25 SPC	3.31	0.090	0.23	0.135	0.34	Silicone	0.360	0.91
60	20	2149SVJ	#18	19/30 TC	0.83	0.050	0.13	0.080	0.20	LDHMW PE	0.230	0.58
60	20	2240-R2	#12	19/25 SPC	3.35	0.093	0.24	0.140	0.36	EPR	0.400	1.02
75	25	2110SUJ	#2	133/23 TC	33.62	0.260	0.66	0.320	0.81	EPR	0.570	1.45
100	30	2062S_J	#8	133/29 SPC	8.37	0.166	0.42	0.220	0.56	Silicone	0.650	1.65
100		2124	#16	19/29 TC	1.31	0.060	0.15	0.100	0.25	LDHMW PE	0.370	0.94
100		2125	#12	19/25 TC	3.31	0.090	0.23	0.130	0.33	LDHMW PE	0.370	0.94
100	30	2242	#10	19/23 SPC	4.92	0.113	0.29	0.190	0.48	EPR	0.620	1.57
125		2196	#10	19/23 TC	5.31	0.117	0.30	0.157	0.40	LDHMW PE	0.490	1.24
125	40	2128	#6	133/27 TC	13.30	0.210	0.53	0.300	0.76	EPR	0.790	2.01
150		2121	#12	19/25 TC	3.31	0.090	0.23	0.130	0.33	LDHMW PE	0.490	1.24
150	60	2265	#2	solid	6.54	0.257	0.65	0.315	0.80	XLPE	0.780	1.98
200		2134	#12	19/25 TC	3.31	0.090	0.23	0.220	0.56	LDHMW PE	0.760	1.93
250		2158	#00	19x	67.43	0.405	1.03	0.480	1.22	LDHMW PE	1.310	3.33
300		2077	#4	solid	21.15	0.204	0.52	0.240	0.61	LDHMW PE	1.300	3.30
300		2182	~ #7	solid	10.00	0.140	0.36	0.200	0.51	LDHMW PE	1.300	3.30
300	100	2019-01	#0000	19x	107.20	0.460	1.17	0.531	1.35	LDHMW PE	1.600	4.06

Specifications are subject to change without prior notice.

All drawing below are full scale

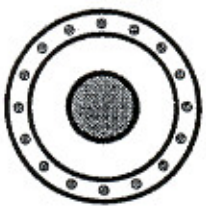

2077


2265


2245


2240-R2


2124


2107

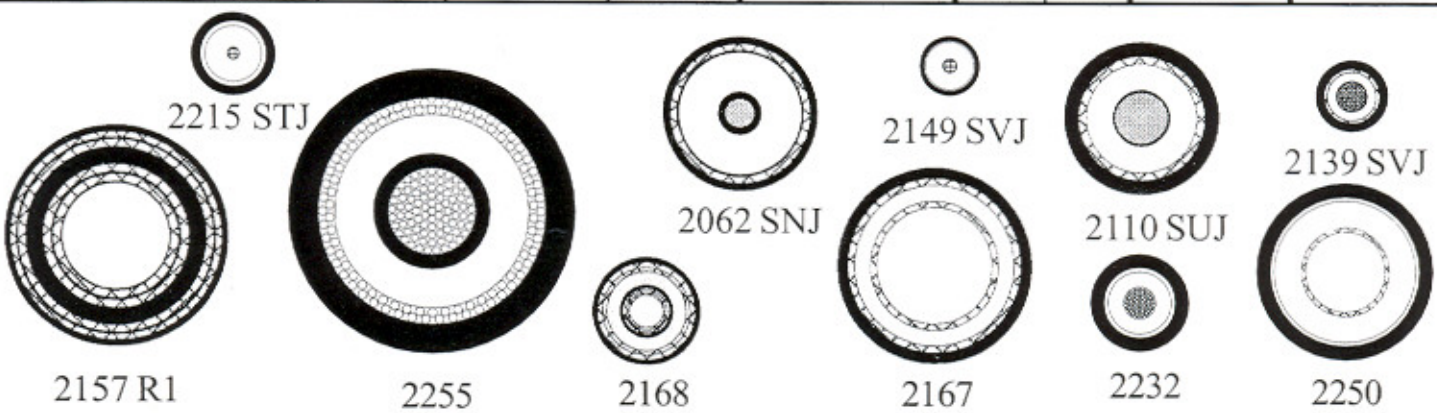

2075 S


2196


2125


2182

	SHIELD				JACKET MATERIAL	OUTSIDE DIAMETER		IMPEDANCE ohms	CAPACITANCE pF/ft
	CONSTRUCTION	AWG EQUIV	COVERAGE %	SEMICON		inches	cm		
	#30 TC braids	#6	95	N/A	TPR	0.470	1.194	14	109
	#30 BC braid	#9	93	N/A	LDHMW PE	0.505	1.283	9	180
	#30 BC braid	#7	95	N/A	LDHMW PE	1.015	2.578	6	274
	#34 TC braid	#18	90	ink&tape		0.420	1.067	25	98
	#34 TC braid	#12	95	N/A	PVC	0.380	0.965	15	125
	#32 BC braids	#9	90	N/A	LDHMW PE	0.566	1.438	19	98
	#28 BC braids	#3	90	N/A	LDHMW PE	1.145	2.908	12	126
	2x50x #18	#0000		N/A	polyurethane	1.550	3.937	18	99
	#30 BC braid	#9	93	N/A	LDHMW PE	0.620	1.575	12	107
	#30 BC braid	#6	80	N/A	LDHMW PE	1.140	2.896	17	90
	#34 TC braid	#15	83	ink&tape	TPR	0.410	1.041	51	36
	#34 TC braid	#18	82	ink&tape		0.420	1.067	41	56
	#34 TC braid	#17	90	ink&tape		0.470	1.194	44	50
	16x #22 TC	#10		extruded	PVC	1.000	2.54	26	75
	#34 TC braid	#15	82	ink&tape		0.525	1.334	39	57
	#34 TC braid	#17	86	N/A	PVC	0.335	0.851	50	37
	#34 TC braid	#14	95	extruded	polyurethane	0.670	1.702	45	48
	#30 TC braid	#4	95	N/A	polyurethane	0.790	2.007	19	118
	#34 TC braid	#16	82	ink&tape		0.810	2.057	41	50
	#34 TC braid	#13	90	N/A	PVC	0.440	1.118	61	30
	#34 TC braid	#13	90	N/A	PVC	0.440	1.118	48	37
	#34 TC braid	#14	90	extruded	polyurethane	0.850	2.159	48	43
	#34 TC braid	#12	90	N/A	PVC	0.625	1.588	50	34
	#30 TC braid	#8	82	ink&tape	polyurethane	0.975	2.477	39	52
	#34 TC braid	#12	90	N/A	PVC	0.625	1.588	59	29
	#34 TC braid	#10	90	extruded	polyolefin	1.010	2.565	42	43
	#34 TC braid	#13	80	N/A	PVC	0.850	2.159	64	31
	#30 TC braid	#6	90	N/A	PVC	1.520	3.861	43	39
	#30 TC braid	#6	90	N/A	PVC	1.500	3.81	70	23
	#30 TC braid	#6	90	N/A	PVC	1.500	3.81	81	21
	0.01 Cu tape	#1	100	extruded	HD PE	2.000	5.08	48	35



MINIMUM BEND RADIUS		MINIMUM AMBIENT TEMP		MAXIMUM CONDUCTOR TEMP		WEIGHT	
						lb/ft	kG/m
inches	cm	F	C	F	C		
8.00	15.24	-60	-51	140	60	0.200	0.298
6.00	3.56	-60	-51	140	60	0.500	0.745
14.00	35.56	-60	-51	140	60	0.850	1.267
1.00	2.54	-85	-65	392	200	0.085	0.127
2.00	5.08	-60	-51	140	60	0.200	0.298
7.00	17.78	-60	-51	140	60	0.540	0.805
15.00	38.10	-60	-51	140	60	1.000	1.490
25.00	63.50	-76	-60	266	130	2.400	3.576
8.00	20.32	-76	-60	160	71	0.600	0.894
12.00	30.48	-76	-60	160	71	0.480	0.715
1.00	2.54	-85	-65	250	121	0.086	0.128
1.00	2.54	-85	-65	392	200	0.083	0.124
1.00	2.54	-85	-65	392	200	0.115	0.171
5.00	12.70	-60	-51	250	121	0.400	0.596
1.00	2.54	-85	-65	392	200	0.156	0.232
2.50	6.35	-60	-51	140	60	0.050	0.075
6.00	15.24	-60	-51	266	130	0.250	0.373
4.00	10.16	-60	-51	160	71	0.490	0.730
5.50	13.97	-85	-65	392	200	0.400	0.596
6.00	15.24	-60	-51	140	60	0.100	0.149
6.00	15.24	-60	-51	140	60	0.100	0.149
5.00	12.70	-60	-51	266	130	0.400	0.596
9.00	22.86	-60	-51	140	60	0.390	0.581
5.00	12.70	-60	-51	250	121	0.430	0.641
8.50	21.59	-60	-51	140	60	0.170	0.253
16.00	40.64	-60	-51	140	60	0.800	1.192
10.00	25.40	-60	-51	140	60	0.370	0.551
18.00	45.72	-60	-51	140	60	1.200	1.788
12.00	30.48	-60	-51	140	60	1.000	1.490
12.00	30.48	-60	-51	140	60	0.900	1.341
28.00	71.12	-76	-60	160	71	2.100	3.129

FORMULAS

Characteristic Impedance

$$Zo\ (ohms) = \frac{138}{\sqrt{K}} \log_{10} D/d$$

Capacitance

$$C\ (pF/ft.) = \frac{7.354K}{\log_{10} D/d}$$

Inductance (L)

$$L\ (microhenry/ft) = .140 \log_{10} D/d$$

Time Delay

$$Td\ (nanoseconds/ft.) = \sqrt{K}$$

Where:

C = capacitance
d = conductor diameter
D = dielectric diameter
K = dielectric constant
L = inductance
Td = time delay
Zo = characteristic impedance in ohms


2012S


2032 SNJ


2024S


2024 SNJ


2242


2024 SVJ


2128

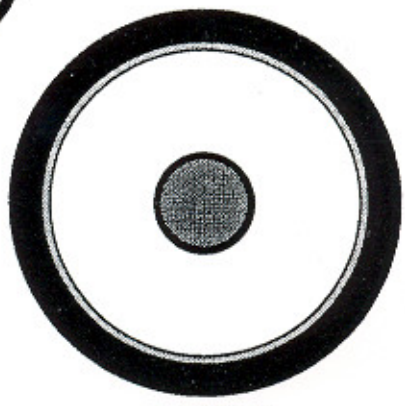

2158


2134


2121


2164


2012 SNJ


2019-01

Insulation Properties of Materials

Resistance To:		Silicone	EPR	EPDM	Neoprene	PVC	Hypalon	High Density Polyethylene	Low Density Polyethylene	X-Linked Polyolefin
Abrasion		P-F	F-G	G	G-E	F-G	G	E	G	G
Heat		E	G-E	E	G	G-E	E	E	G	E
Weather/Sun		E	E	E	G	G-E	E	E	E	F
Flame		F-G	P	P	G	E	G-E	P	P	G
Water		G-E	E	G-E	E	G	E	E	E	G
Acid		F-G	E	G-E	G	G-E	E	E	G-E	G
Alkali		F-G	E	G-E	G	G-E	E	E	G-E	G
Oxidation		E	E	E	G	E	E	E	E	G
Ozone		E	E	E	G	E	E	E	E	G
Radiation		E	F	G	F-G	F	E	G-E	G-E	G
Aliphatic Hydrocarbons		P-F	P-F	P	G	P-G	F	G-E	G-E	F-G
Aromatic Hydrocarbons		P-F	P-F	F	P-F	P-F	F	P	P	F-G
Halogenated Hydrocarbons		P-G	P	P	P	P-F	P-F	G	G	F-G
Alcohol		G	E	P	F	G-E	G	E	E	F-G
	ASTM									
Specific Gravity	792-66	1.1-1.6	0.9	0.85	1.2-1.6	1.2-1.7	1.4-1.7	0.95	0.92	1.3
Tensile Strength, psi	638-77	1000	3400	700-2400	1200-2700	1500-4500	1200-2200	3600	1700	1800
Elongation %	412-75	100-500	400	200-550	300-700	40-400	300-600	400	600	350
Volume Resistivity, ohm-cm	257-78	8.00E+13	1.00E+18	1.00E+17	1.00E+13	1.00E+15	1.00E+13	1.00E+17	1.00E+13	1.00E+15
Temp. Range, Hi/Low C		150/-80	105/-40	105/-55	60/-20	80/-20	90/-20	80/-60	80/-60	125/-40
Dielectric Strength V/mil	149-75	100-700	600	500-800	600	250-500	500	500	550	500
Dielectric Constant,60/1kHz	150-78	3.0-3.5	2.2-3.3	2.5-3.5	5.0-7.0	3.2-9.0	9.0-11.0	2.3	2.3	2.3

Note: All values shown are nominal and should be used only as a guide, consult factory for specific information.

E=Excellent G=Good F=Fair P=Poor

Hydrocarbons

Aliphatic - gasoline, kerosene, etc

Aromatic - benzol, toluol, etc

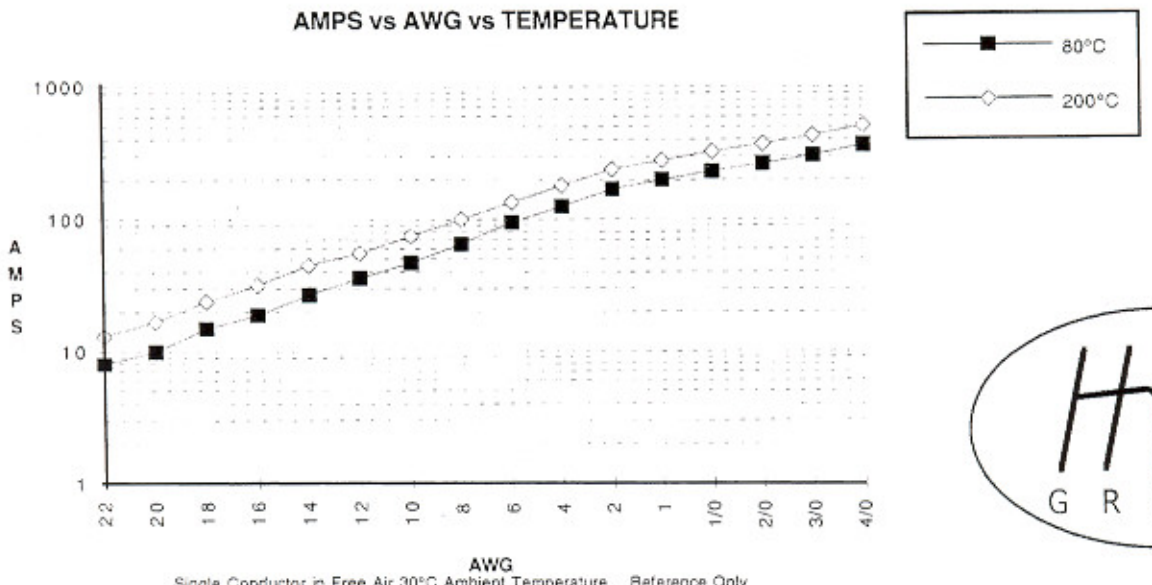
Halogenated - degreaser solvents

EPR - ethylene-propylene copolymer rubber

EPDM - ethylene-propylene diene monomer rubber

Hypalon - chlorosulfonated polyethylene

Polyethylene - insulations derived from the polymerization of ethylene gas



HVT GROUP

Dielectric Sciences, Inc.

88 Turnpike Road, Chelmsford, MA 01824 978-250-1507 / Fax 978-250-1699

e-mail: sales@dielectricsciences.com

CABLE BROCHURE TERMINOLOGY

VOLTAGE (KV)
The recommended maximum AC or DC voltage that may be continuously applied to a wire in conformance with it's specifications. Some cables have been tested for operation above their rated voltage for a limited period. For pulsed operation or insulating dielectric environments, please consult factory.

IMPEDANCE (OHMS)
The average characteristic, or surge impedance of a coaxial cable is determined by the ratio of the outer diameter of the inner conductor to the inner diameter of the outer conductor and by the dielectric constant of the insulating material between the conductors.

CAPACITANCE
The measurement, in picofarads per foot, of the ability of a dielectric material to store electrical energy.

CONDUCTOR SIZE
AWG: American Wire Gauge The standard for copper wire sizes, specifying the diameter, The smaller the AWG number, the larger the wire diameter.
Strands: The first number signifies the number of wires in the conductor. The second number signifies the wire gauge size of the strand. The letters following represent the type of plating on the copper conductor,

TC: tinned copper
SPC: silver plated copper
NPC: nickel plated copper
BC: bare copper

Square mm: The metric measurement of copper in the conductor.
Diameter: The outside diameter of the conductor in inches or centimeters.
Semicon: A semi-conducting material that has a resistance characteristic between that of insulators and conductors. When bonded between two elements of a cable, the adjacent surfaces of the two elements will maintain equal potential, providing uniform voltage stress, thus reducing internal corona. Semicon is used both for the inner conductor shielding and between the dielectric insulation and metallic shield

DIELECTRIC
A non-conducting, insulating material with a dielectric constant, which is the ratio of capacitance of the material to the capacitance of air.
Material: specifies type of compound used.
EPR: ethylene propylene copolymer rubber
EPDM: ethylene propylene diene monomer rubber
Hypalon: chlorosulfonated polyethylene
HMW: high molecular weight
LD: low density
PVC: polyvinyl chloride
PE: polyethylene

Diameter: outside dimension over dielectric in inches and centimeters

SHIELD
A conducting layer or sheath of material applied around an insulated conductor or conductors to prevent extraneous electrostatic fields between the enclosed conductors and the external environment Typical shields are constructed of copper braid, metal tapes, or conductive rubbers. Shields can also be used to provide return current paths.
Construction: The AWG size of the individual strand in the braid with designation of plating on the strand
AWG equiv: The conductor size equivalent of the braid wires
% coverage: The physical area of the cable covered by the shielding material

JACKET MATERIAL
An outer sheath or protective covering over a conductor or insulation mainly used for protection against the environment, but may also be used to provide additional insulation

OUTSIDE DIAMETER
The measurement in inches and centimeters of the finished cable.

MINIMUM BEND RADIUS
The measurement of the flexibility of the finished cable determined by the strands in the conductor and the material used in the dielectric and jacket.

PART NUMBER
The four digit part number characterizes the basic core of the cable and can be followed by a suffix indicating the insulation jacket material or type of construction.

MINIMUM AMBIENT TEMPERATURE
The measurement, in F and C, of the safe environmental operating temperature of the finished cable determined by the dielectric materials used in the insulation and jacket.

MAXIMUM CONDUCTOR TEMPERATURE
The maximum operating temperature in F and C of the finished cable determined by the size and types of materials in the cable.

WEIGHT
The weight in pounds per foot, and kilograms per meter of the finished cable.