



High Voltage Products. High Voltage Experts.

Unshielded Cable

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Voltage The recommended maximum AC or DC voltage that may be continuously applied to a wire in conformance with its specifications. Some cables have been tested for operation above their rated voltage for a limited time period. For pulsed operation or insulating dielectric environments please contact us.

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 and by the dielectric constant of the insulating material between the conductors.

Capacitance The measurement of picofarads per metre, of the ability of a dielectric material to store electrical energy. Capacitance values for unshielded cables assume a uniform conductive surrounding.

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 gauge size of the strand.

The letters following represent the type of plating on the copper conductor. **TC** – Tin Plated 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 mm.

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 for both 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 the type of compound used

EPR: Ethylene propylene diene monomer rubber

EPDM: Ethylene propylene diene monomer rubber

Hypalon: Chlorosulfonated polyethylene

LD: Low density

PVC: Polyvinyl chloride

PE: Polyethylene

TPR: Thermoplastic rubber

Diameter Outside dimension over dielectric in mm

Rated Voltage The maximum DC voltage that can be applied between the centre conductor and inner shield.

Inner 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 a copper braid, metal tapes or conductive rubbers. Shields can also be used to provide return current paths.

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Construction The AWG size of the individual strand in the braid with designation of plating on the strand.

AWG Equivalent The conductor size equivalent of the braid wires.

% Coverage The physical area of the cable covered by the shielding.

Intershield Insulation Specifies the type and thickness of non-conductive insulating material between the two shields.

Rated Voltage The maximum DC voltage that can be applied between the inner and outer shields.

Outer Shield The outer shield provides additional electrostatic shielding for low noise applications.

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 mm's 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 characterises 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 degrees Celsius of the safe environmental operating temperature of the finished cable determined by the size and types of material in the cable.

Maximum Conductor Temperature The maximum operating temperature in degrees Celsius of the finished cable, determined by the size and types of material in the cable.

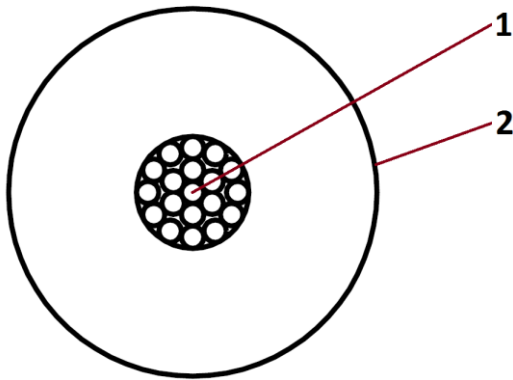
Weight The weight in kilograms per metre of the finished cable.

Standard Unshielded Cable Data

Rated Voltage		Part Number	Dielectric Material	Outside Diameter (mm)	Impedance (Ω)	Capacitance (pf/m)	Min. Bend Radius (mm)	Min. Ambient Temp. ($^{\circ}\text{C}$)	Max. Conductor Temp. ($^{\circ}\text{C}$)	Weight (kg/m)
DC	AC									
10	-	C6905	FEP	2.6	49	102	36	-65	93	0.02
13	5	C2075	Silicone	6.0	24	321	64	-65	200	0.05
15	-	C2202	Silicone	5.6	19	312	25	-65	149	0.08
15	-	C2185/R	Silicone	3.2	42	141	13	-65	149	0.02
30	-	C2178	Silicone	4.7	55	108	10	-65	149	0.03
40	14	C2012	Silicone	6.0	41	184	10	-65	200	0.05
50	17	C2032	Silicone	7.5	44	164	13	-65	200	0.06
60	20	C2024	Silicone	9.1	38	187	13	-65	200	0.11
60	20	C2149	LDHMW PE	5.8	50	121	64	-51	60	0.03
80	25	C2229	Silicone	10.7	45	151	13	-65	200	0.15
100	30	C2062	Silicone	16.5	41	164	64	-51	200	0.37
100	30	C2124/A	LDHMW PE	9.4	61	98	127	-51	60	0.08
100	30	C2125/A	LDHMW PE	9.4	48	121	127	-51	60	0.09
150	45	C2121/A	LDHMW PE	12.4	59	95	178	-51	60	0.13

C6905

10kV Single Core FEP



1. Conductor	1x #22AWG (19/34) Silver Plated Copper	
2. Dielectric	Teflon FEP	Ø 2.6mm ±0.25mm

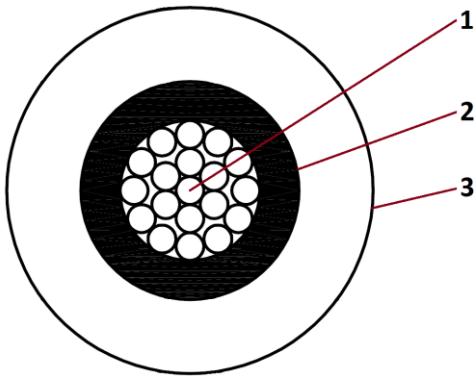


TECHNICAL DATA

Operating Voltage	10kV _{DC}
Impedance	49Ω
Capacitance	102pF/m
Minimum Bend Radius	36mm
Minimum Ambient Temperature	-65°C
Maximum Conductor Temperature	93°C
Weight	0.02kg/m

C2075

13kV Single Core Silicone



1. Conductor	#12AWG (19x25) Silver Plated Copper	
2. Semi-con	Silicone	Ø 3.6mm ± 0.25mm
3. Dielectric	Silicone Rubber (White)	Ø 6.0mm ± 0.38mm

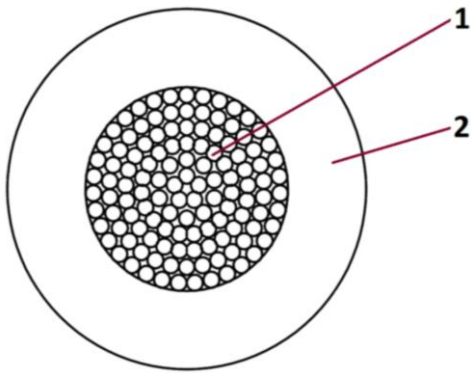


TECHNICAL DATA

Operating Voltage	13kVDC/5kVAC
Impedance	24Ω
Capacitance	321pF/m
Minimum Bend Radius	64mm
Minimum Ambient Temperature	-65°C
Maximum Conductor Temperature	200°C
Weight	0.05kg/m

C2202

15kV Single Core Silicone



1. Conductor	#10AWG (105/30) Tin Plated Copper	
2. Dielectric	Silicone Rubber (White)	Ø 5.6mm ± 0.25mm

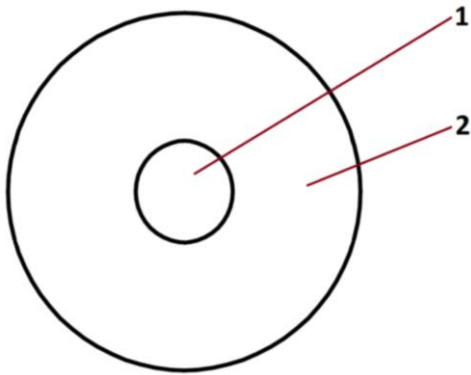


TECHNICAL DATA

Operating Voltage	15kV _{DC}
Impedance	19Ω
Capacitance	312pF/m
Minimum Bend Radius	25mm
Minimum Ambient Temperature	-65°C
Maximum Conductor Temperature	149°C
Weight	0.08kg/m

C2185/R

15kV Single Core Silicone



1. Conductor	#20AWG (10/30) Tin Plated Copper	
2. Dielectric	Silicone Rubber	Ø 3.2mm ± 0.25mm

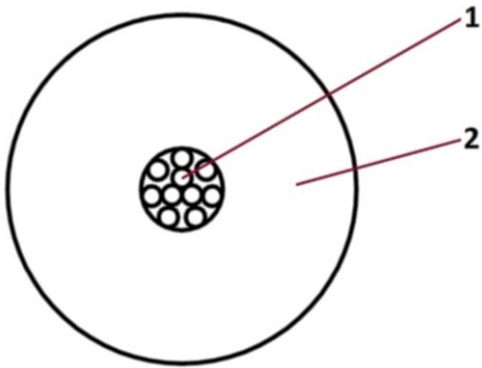


TECHNICAL DATA

Operating Voltage	15kV _{DC}
Impedance	42Ω
Capacitance	141pF/m
Minimum Bend Radius	13mm
Minimum Ambient Temperature	-65°C
Maximum Conductor Temperature	149°C
Weight	0.02kg/m

C2178

30kV Single Core Silicone



1. Conductor	#20AWG (10/30) Tin Plated Copper	
2. Dielectric	Silicone Rubber	Ø 4.7mm ± 0.25mm

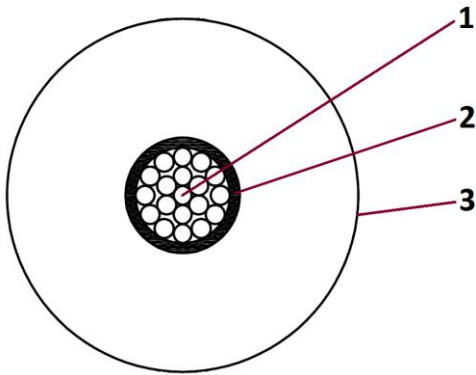


TECHNICAL DATA

Operating Voltage	30kV _{DC}
Impedance	55Ω
Capacitance	108pF/m
Minimum Bend Radius	10mm
Minimum Ambient Temperature	-65°C
Maximum Conductor Temperature	149°C
Weight	0.03kg/m

C2012

40kV Single Core Silicone



1. Conductor	#18AWG (19/30) Silver Plated Copper	
2. Semi-con	Silicone	Ø 2.3mm ± 0.25mm
3. Dielectric	Silicone Rubber (White)	Ø 6.0mm ± 0.38mm

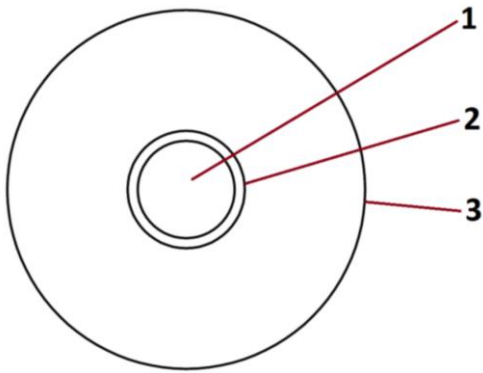


TECHNICAL DATA

Operating Voltage	40kVDC/14kVAC
Impedance	41Ω
Capacitance	184pF/m
Minimum Bend Radius	10mm
Minimum Ambient Temperature	-65°C
Maximum Conductor Temperature	200°C
Weight	0.05kg/m

C2032

50kV Single Core Silicone



1. Conductor	19x Silver Plated Copper	
2. Semi-con	Silicone	Ø 2.8mm ± 0.25mm
3. Dielectric	Silicone Rubber (White)	Ø 7.5mm ± 0.38mm

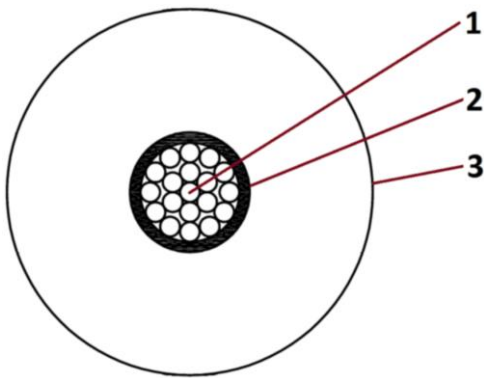


TECHNICAL DATA

Operating Voltage	50kVDC/17kVAC
Impedance	44Ω
Capacitance	164pF/m
Minimum Bend Radius	13mm
Minimum Ambient Temperature	-65°C
Maximum Conductor Temperature	200°C
Weight	0.06kg/m

C2024

60kV Single Core Silicone



1. Conductor	1x #12AWG (19x#25AWG) Silver Plated Copper	
2. Semi-con	Silicone	
3. Dielectric	Silicone Rubber (White)	Ø 9.1mm 0.25mm Min. Wall

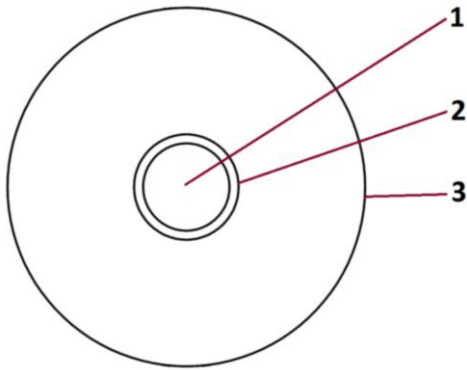


TECHNICAL DATA

Operating Voltage	60kVDC/20kVAC
Impedance	38Ω
Capacitance	187pF/m
Minimum Bend Radius	13mm
Minimum Ambient Temperature	-65°C
Maximum Conductor Temperature	200°C
Weight	0.11kg/m

C2149

60kV Single Core Polyethylene



1. Conductor	#18AWG (19/30) Tin Plated Copper	
2. Semi-con	Polyethylene	Ø 2.0mm ± 0.25mm
3. Dielectric	LDHMW Polyethylene (Natural)	Ø 5.8mm ± 0.25mm

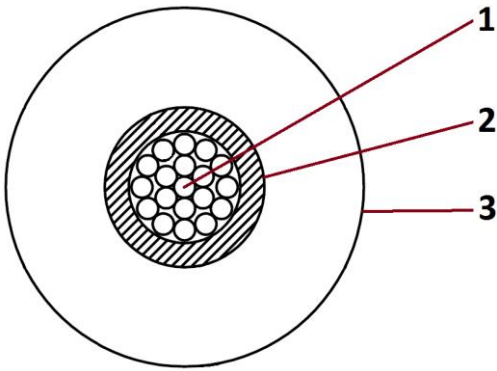


TECHNICAL DATA

Operating Voltage	60kVDC/20kVAC
Impedance	50Ω
Capacitance	121pF/m
Minimum Bend Radius	64mm
Minimum Ambient Temperature	-51°C
Maximum Conductor Temperature	60°C
Weight	0.03kg/m

C2229

80kV Single Core Silicone



1. Conductor	#12AWG (19x25) Silver Plated Copper	
2. Semi-con	Silicone	Ø 3.6mm ± 0.25mm
3. Dielectric	Silicone Rubber (White)	Ø10.7mm ± 0.38mm

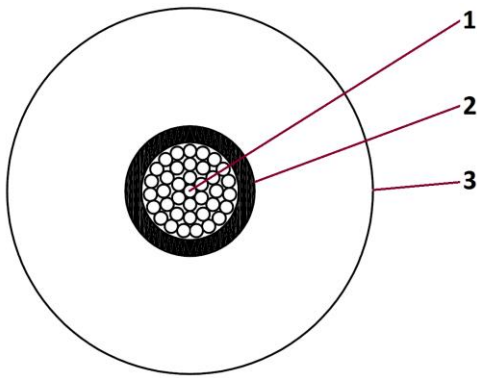


TECHNICAL DATA

Operating Voltage	80kV _{DC} /25kV _{AC}
Impedance	45Ω
Capacitance	151pF/m
Minimum Bend Radius	13mm
Minimum Ambient Temperature	-65°C
Maximum Conductor Temperature	200°C
Weight	0.15kg/m

C2062

100kV Single Core Silicone



1. Conductor	#8AWG (133x29) Silver Plated Copper	
2. Semi-con	Silicone	Ø 5.6mm 0.5mm Min. Wall
3. Dielectric	Silicone Rubber (White)	Ø16.5mm ± 0.25mm

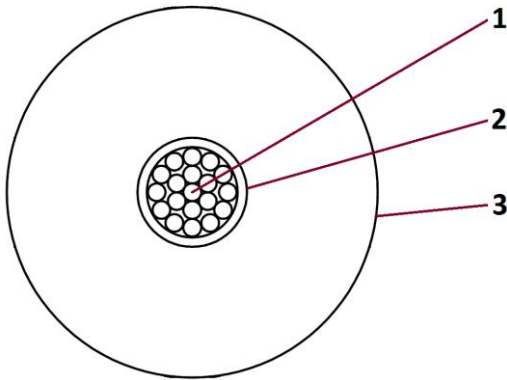


TECHNICAL DATA

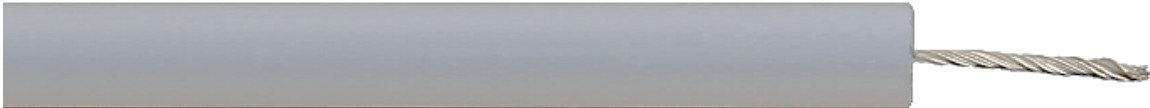
Operating Voltage	100kV _{DC} /30kV _{AC}
Impedance	41Ω
Capacitance	164pF/m
Minimum Bend Radius	64mm
Minimum Ambient Temperature	-51°C
Maximum Conductor Temperature	200°C
Weight	0.37kg/m

C2124/A

100kV Single Core Polyethylene



1. Conductor	#16AWG (19/29) Tin Plated Copper	
2. Semi-con	Polyethylene	Ø 2.5mm ± 0.25mm
3. Dielectric	LDHMW Polyethylene (Natural)	Ø 9.4mm ± 0.25mm

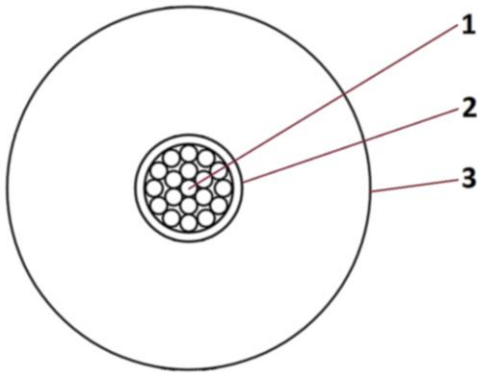


TECHNICAL DATA

Operating Voltage	100kV _{DC} /30kV _{AC}
Impedance	61Ω
Capacitance	98pF/m
Minimum Bend Radius	127mm
Minimum Ambient Temperature	-51°C
Maximum Conductor Temperature	60°C
Weight	0.08kg/m

C2125/A

100kV Single Core Polyethylene



1. Conductor	#12AWG (19/25) Tin Plated Copper	
2. Semi-con	Polyethylene	Ø 3.3mm ± 0.25mm
3. Dielectric	LDHMW Polyethylene (Natural)	Ø 9.4mm ± 0.25mm

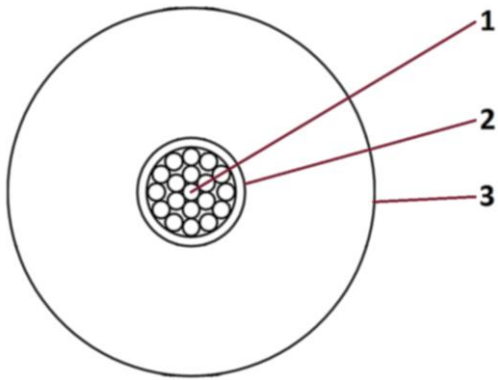


TECHNICAL DATA

Operating Voltage	100kV _{DC} /30kV _{AC}
Impedance	48Ω
Capacitance	121pF/m
Minimum Bend Radius	127mm
Minimum Ambient Temperature	-51°C
Maximum Conductor Temperature	60°C
Weight	0.09kg/m

C2121/A

150kV Single Core Polyethylene



1. Conductor	#12AWG (19/25) Tin Plated Copper	
2. Semi-con	Polyethylene	Ø 3.3mm ± 0.25mm
3. Dielectric	LDHMW Polyethylene (Natural)	Ø12.4mm ± 0.25mm



TECHNICAL DATA

Operating Voltage	150kVDC/45kVAC
Impedance	59Ω
Capacitance	95pF/m
Minimum Bend Radius	178mm
Minimum Ambient Temperature	-51°C
Maximum Conductor Temperature	60°C
Weight	0.13kg/m

High Voltage Cable Enquiry Form

CABLE SPECIFICATION	
Voltage DC or AC (Peak/RMS/Bipolar/Unipolar)	
Current (Average/Peak/RMS)	
Shielded or Unshielded	
Single-Core or Multi-Core	
Coaxial or Triaxial	
Impedance/Capacitance	
Any mechanical restrictions ie. Minimum Bend Radius	
Operating Temperature	
<i>If Pulsed:</i>	
Pulse Width (Length)	
Rise and Decay Times	
Repetition Rate/Duty Cycle/Frequency	
Does the current return on the shield? (Coaxial)	
APPLICATION DETAILS	
Type of application	
End user	
Total length required	
Dimensional restrictions	
How is the cable terminated?	
Any other information	

Can't find a suitable cable for your application? Essex X-Ray offer a wider range of customised HV cable solutions for scientific and industrial use. Please complete the above form and return it to info@hvproducts.de

