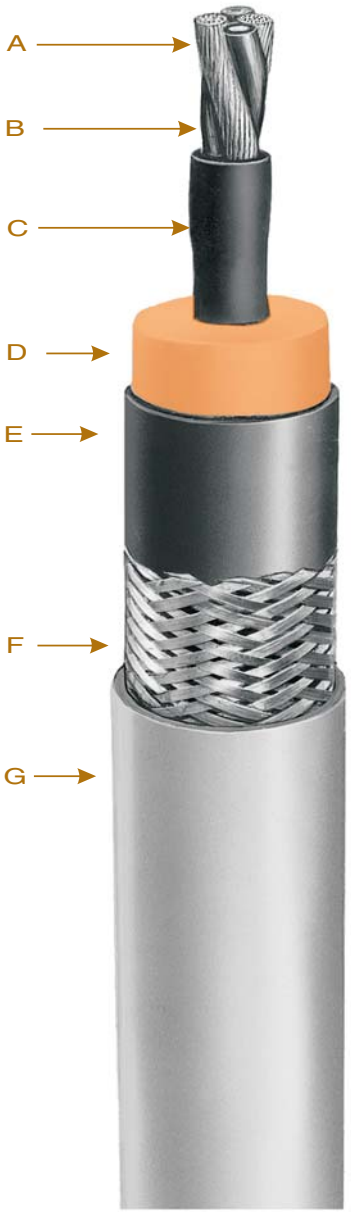
Okonite X-Ray/Hi-Voltage Cable

Low Noise

65kV, 75kV, 100kV, 230kV and 250kV dc Rating
Three Conductor or Four Conductor



A Coated Stranded Copper Conductors
B Polyester Insulation
C Extruded Semiconducting Layer
D Primary Insulation – Okoguard
E Extruded Insulation Shield
F Coated Copper Braid
G Jacket – Okoseal

Applications

Okonite X-Ray cables are suitable for use on X-Ray apparatus for medical, industrial, research and control applications. They give trouble-free performance where pulse type high voltages are required. Although primarily used with medical diagnostic imaging equipment, Okonite X-Ray cables are also used with equipment in industrial applications as well as in research projects where high voltages, low power are required.

Okonite LOW NOISE X-Ray cables have specifically been designed for use where sensitive measurements are required. These LOW NOISE cables are manufactured and assurance tested to meet less than 10 picocoulumb discharge thereby reducing noise to a minimum.

Okonite LOW NOISE X-Ray cables are offered at 65kV, 75kV, 100kV, 230kV and 250kV dc ratings.

Typically, Okonite X-Ray cables are used to supply the anode and cathode voltages to the X-Ray tube. Since one terminal operates at a negative potential and the other at a positive potential, the voltage across the X-Ray tube is twice (2X) the rated voltage of the cable.

The two usual constructions are (1) three conductor (3/C) used on typical cathode cable installations, and (2) four conductor (4/C) utilized on installations with a grid controlled lead. Upon request, designs and constructions can be developed for special applications.

Product Features

- Low Noise - < 10 pC @ 200 Vac/mil of insulation to 42 kV max.
- Performance tested for long trouble-free service.
- Small diameter.
- Flexible construction.
- Excellent flexing endurance.
- Mechanically rugged.
- Easy to strip and terminate.
- Resistant to most oils and chemicals.
- Complies with NEMA Standard XR-7 where applicable.

Installation

The minimum bending radius for permanent installation or flexing in service is four times the cable diameter.

Specifications

Cable Core: Each Low Noise cable core contains two insulated filament conductor. In 65, 75, and 100kV cable filament conductors are #15 AWG (19x) [1.65mm^2] tinned copper insulated with heat sealed color coded polyester tape. In 230kV cables, the filament wires are #16 AWG (19x) [1.31mm^2] tinned copper. The 250 kV cable filaments are #14 AWG (19x) [2.08mm^2] tinned copper. Both the 230 and 250kV filament wires are insulated with an extrusion of ETFE. Four conductor cables include one #20 AWG (7x) [0.52mm^2] copperweld conductor per ASTM B-45 insulated with heat sealed polyester and shielded with metalized red polyester.

The tinned copper uninsulated conductor in 3/C 65, 75, 100 and 230kV cables is segmented into two #18 AWG [0.83mm^2] flex stranded wires. The 4/C uninsulated conductor is segmented into three #18 AWG wires. A single #12 AWG (19x) wire is used in the 250kV cable.

Core Shield: An extruded layer of semiconducting compound encapsulates the composite core assembly.

High Voltage Insulation: Okonite's premium EPR (ethylene-propylene rubber) insulation. This ozone resistant high voltage dielectric is extruded in tandem with the semiconducting layers which insures an intimate and contaminant free interface between the layers.

Insulation Shield: A strippable extruded layer of semiconducting EPR compound is applied directly over the insulation.

Shield: A braid of tinned copper wires is applied directly over the insulation shield. Minimum coverage indicated in table.

Jacket: A flexible Okoseal (specially compounded PVC) jacket is extruded over the shield to provide additional mechanical strength and resistance to most oils and chemicals.

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	Description	Catalog Number	Tinned Copper Braid Coverage (%)	Cellophane Wrap (1)	Jacket Color	Insulation O.D. Inches ± 0.010	Insulation O.D. mm ± 0.25	Jacket O.D. Inches ± 0.015	Jacket O.D. mm ± 0.38	Net. Wt. (lbs/1000 ft.)	Net. Wt. (kg/100m)	Approx. Ship Weight (lbs./1000')	Approx. Ship Weight (kg./100m)
65kV	**3 Conductors** 2-#15 AWG insulated 1-(2-#18 AWG) uninsulated	504-22-6436	80	yes	Gray	0.465	11.81	0.605	15.36	219	33	243	36
75kV	**3 Conductors** 2-#15 AWG insulated 1-(2-#18 AWG) uninsulated	504-22-3437 504-22-3495	80 95	no	Gray	0.510	12.95	0.650	16.50	247 258	37 38	279 297	42 44
	4 Conductors 2-#15 AWG 1-#20 AWG Copperweld, insulated 1-(3-#18 AWG) uninsulated	504-22-4464	80	no	Gray	0.570	14.48	0.715	18.20	296	44	335	50
75kV Extra Small Diameter	**3 Conductors** 2-#15 AWG insulated 1-(2-#18 AWG) uninsulated	504-22-3415	80	no	Gray	0.490	12.45	0.620	15.75	228	34	267	40
100kV	**3 Conductors** 2-#15 AWG insulated 1-(2-#18 AWG) uninsulated	▲ 504-22-3436 ▲ 504-22-4437	80	no yes	Gray	0.620	15.75	0.785	19.94	341	51	380	57
	4 Conductors 2-#15 AWG 1-#20 AWG Copperweld, insulated 1-(3#18 AWG) uninsulated	504-22-4436 504-22-4437	80	no yes	Gray	0.660	16.75	0.845	21.46	391	58	446	66
230kV	**3 Conductors** 2-#16 AWG insulated 1-(2-#18 AWG) uninsulated	▲ 504-22-7410	80	no	Black	0.980 ±.020	24.89 ±.51	1.250 ±.025	31.75 ±.64	759	113	849	126
250kV	**3 Conductors** 2-#14 AWG insulated 1-(#12 AWG) uninsulated	504-22-9430	80	no	Black	1.280 ±.020	32.51 ±.51	1.505 ±.025	38.23 ±.64	1119	167	1250	186

▲ **Authorized stock Item.** Available from our Customer Service Centers.

(1) Cable is helically wrapped with a cellophane tape to maintain cleanliness during installation and includes a pull cord for ease of removal.

- Designs for special applications upon request.
- Refer to Product Data Section 6 Sheet 1 for X-Ray Cable - Low Noise constructions.

Electrical Characteristics

Rated Voltage Rectified dc kV (2)	Number of Conductors	Core to Shield Capacitance ± 10% pF/ft.	Core to Shield Capacitance ± 10% pF/m
65	3	52	170
75 (ESD)	3	49.5	162
75	3	47	154
75	4	57	187
100	3	40	131
100	4	49	159
230	3	35	115
250	3	31	101

(2) Voltage rating is between the conductor and the shielding braid.

4/C only: Copperweld grid lead capacitance = 70 pF/ft. (230 pF/m).

Conductor resistance @ 25°C:

	#16 AWG (1.31 mm^2) tinned copper =	4.18 ohms/1000 ft (1.37 ohms/100 m)
	#15 AWG (1.65 mm^2) tinned copper =	3.51 ohms/1000 ft (1.15 ohms/100 m)
	#18 AWG (0.83 mm^2) tinned copper =	7.16 ohms/1000 ft (2.34 ohms/100 m)
2 X	#18 AWG (0.83 mm^2) tinned copper =	3.58 ohms/1000 ft (1.17 ohms/100 m)
3 X	#18 AWG (0.83 mm^2) tinned copper =	2.39 ohms/1000 ft (0.78 ohms/100 m)
	#20 AWG (0.52 mm^2) copperweld =	24.12 ohms/1000 ft (7.91 ohms/100 m)
	#14 AWG (2.08 mm^2) tinned copper =	2.73 ohms/1000 ft (0.895 ohms/100 m)
	#12 AWG (3.31 mm^2) tinned copper =	1.72 ohms/1000 ft (0.564 ohms/100 m)

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