

# OKONITE CABLES



**IN STOCK**



**FOR IMMEDIATE DELIVERY**



**THE  
OKONITE  
COMPANY**

# NEED CABLE IN A HURRY?

Okonite maintains an in-stock inventory of the products shown in these pages, identified by catalog number. The products used in this bulletin are stocked in our service centers which are linked via an on-line computer network with our district sales offices and manufacturing plants to provide up-to-the-minute in-stock and stock replenishment information.

Your local Okonite office and service center, listed below, are ready to assist you with information and to expedite your cable selection. In addition, they will be able to discuss your needs regarding other sizes and types of instrumentation cables as well as a full range of power and control cables.

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# GLOSSARY

## INDUSTRY ASSOCIATIONS

**ABS** American Bureau of Shipping

**AEIC** Association of Edison Illuminating Companies

**ANSI** American National Standards Institute

**AREMA** American Railway Engineering and Maintenance of Way Association

**ASTM** American Society for Testing and Materials

**ICEA** Insulated Cable Engineers Association (formerly IPCEA)

**IEC** International Electrotechnical Commission

**IEEE** Institute of Electrical and Electronics Engineers

**NEC** National Electrical Code

**NEMA** National Electrical Manufacturers Association

**NFPA** National Fire Protection Association

## GOVERNMENT AGENCIES

**OSHA** Occupational Safety and Health Act administered by U.S. Dept. of Labor which establishes employee safety standards in all industrial and commercial establishments

**RUS** Rural Utility Systems of the U.S. Department of Agriculture, formerly REA

## OKONITE REGISTERED TRADE NAMES

**C-L-X®** Continuous-Lightweight-Exterior. Welded and corrugated, impervious metallic sheathed cables

**LOXARMOR®** An interlocked "S" shaped armor cable covering, normally galvanized steel or aluminum

**OKOBON®** A moisture resistant cable finish consisting of an aluminum/copolymer tape fused to itself and to an overall CPE jacket

**OKOCLAD®** Welded smooth sheath Type MC cable

**OKOCLEAR TP®** Thermoplastic Polyolefin (TPPO) low smoke/zero halogen jacket compound (XLPO)

**OKOCLEAR TS®** Thermosetting Polyolefin (XLPO) low smoke/zero halogen jacket compound.

**OKOCORD®** Rubber insulated, reinforced jacketed, mold cured portable, flexible cables

**OKOGUARD®** Okonite's exclusive ethylene propylene rubber (EPR) based,

thermosetting insulation, with an optimum balance of electrical and physical properties unequaled in other solid dielectrics, used on power cables rated 600 V and above (40th Anniversary - 2008)

**OKOLENE®** Thermoplastic polyethylene based insulating or jacketing compound

**OKONITE®** Okonite's exclusive ethylene propylene rubber (EPR) based, thermosetting insulation used up to 2000V

**OKONITE-FMR®** Okonite's exclusive flame and moisture resistant ethylene propylene rubber (EPR) insulation used up to 2000V.

**OKOGUARD-OKOLON®** Composite insulation system consisting of a layer of EPR and covered with a chlorinated thermoset compound

**OKO-PACK®** Okonite's unique compact round conductor shape and design

**OKOSEAL®** A PVC insulation or jacketing compound with excellent resistance to flame and most chemicals

**OKOSEAL-N®** PVC insulated and nylon jacketed low voltage conductors, Type THHN, THWN and TFN

**OKOLON TP-CPE®** Thermoplastic moisture resistant CPE compound serving as an outer sheath

**OKOLON TS-CPE®** Thermoset moisture resistant flame retardant CPE outer sheath

**OKOTHERM®** Heat resistant silicone rubber based insulation for use in high temperature locations

**OKOZEL®** Okonite's name for its ETFE based flame and radiation resistant insulating and jacketing compound

**P-30®** Okolene-Okoseal insulated 600V multiple and single conductor control cable

**P-45®** Okolene-Okoseal Insulated 1000V Multiple Conductor Control Cable.

**X-OLENE®** Okonite's name for its XLPE insulation

## STANDARD TERMS

**AWG** American Wire Gauge, based on the circular mil system where 1 mil equals 0.001 inch

**CIC** Cable in Conduit for buried distribution systems

**CIC** Circuit Integrity Flame retardant Cables

**CLXM** C-L-X Marine

**CPE** Chlorinated Polyethylene jacketing material

**CSA** Canadian Standards Association is an independent organization which implements and monitors the commercial and consumer electrical product standards. The CSA assures compliance to the various Canadian Electrical Codes.

**CT** Designation given to cables meeting UL requirements for cable tray use

**CTC** Designation for Centralized Traffic Control Code Line cable

**CWCMC** UL's designation for 600 volt C-L-X marine shipboard cable - "continuously welded corrugated MC" cable

**DEL** Diesel Electric Locomotive and car wiring with Okonite insulation and Okolon jacket

**EPR** Ethylene Propylene Rubber insulating compound ingredient

**ETFE** Modified Ethylene Tetrafluoroethylene compound (Okozel) used for insulation and jackets

**FEP** Fluorinated Ethylene Propylene insulation and jacket compound

**FIELDBUS CABLE** - High Speed digital signal transmission instrumentation cable having specific electrical characteristics

**FPL** Power limited Fire Protective Signal Cable (NEC Art. 760). 300V rated

**FMR** Flame and Moisture Retardant

**HL** Designation given to MC and ITC cables meeting NEC and UL requirements for use in Division 1 hazardous location.

**ITC** Instrumentation tray cable NEC Article 727

**INSULATION LEVEL-100%** Cable for use on grounded systems or where the system is provided with relay protection such that grounds faults will be cleared as rapidly as possible but in any case within one minute

**INSULATION LEVEL-133%** Cable for use on ungrounded or grounded systems or where the faulted section will be de-energized in a time not exceeding one hour

**kcmil** A unit of conductor area in thousands of circular mils. (Formerly MCM)

**LOCA** Loss of Coolant Accident, IEEE 383 defines test requirements

**LCS** Longitudinal Corrugated Shield

**MC** Metal-Clad cable. NEC type designation for power and control cables

# GLOSSARY (continued)

enclosed in a smooth metallic sheath (Okoclad), welded and corrugated metallic sheath (C-L-X), or an interlocking tape armor (Loxarmor) (Article 330)

**mil** 0.001 inch

**MV** Medium Voltage cable. NEC designation for single & multiple conductor insulated cable rated 2001 to 35,000 volts

**NPLF** Non-Power Limited Fire Protective Signal Cable (NEC Art. 760). 600V rated

**OKO-MARINE** UL designation for non-armored Marine Shipboard Cable

**PLTC** Type designation for Power-Limited Tray Cable for use in Class 2 or 3 power-limited circuits; instrumentation, supervisory control, and thermocouple extension

**P-NS** Single pair or triad, Non Shielded, instrumentation or thermocouple extension cable

**P-OS** Single or multi Pairs or Triads with Overall Shield, instrumentation or thermocouple extension cable

**POWER-LIMITED CIRCUIT** Circuit either inherently limited requiring no overcurrent protection or limited by a combination of a power source and overcurrent protection

**PVC** Polyvinyl Chloride insulating and jacketing material which is usually flame retardant and resistant to many chemicals

**P-104** Okonite's identification number issued by the Pennsylvania Department of Environmental Resources

**RHH** NEC conductor type designation for conductors with Heat resistant rubber or XLPE insulation, for use in dry locations

**RHW-2** NEC conductor type designation for conductors with Heat and Moisture resistant rubber or XLPE insulation, for use in 90°C wet or dry locations

**RTA** Thermoplastic insulated, aluminum shielded, polyethylene jacketed communication cable

**SCREEN** A semiconducting nonmetallic layer used under and over the insulation of power cables rated over 2kV to reduce electrical stresses and corona

**SEMICONDUCTING** An extruded layer or tape of such resistance that when applied between two elements of a cable the adjacent surfaces of the two elements will

maintain substantially the same potential

**SHIELD** A nonmagnetic, metallic material applied over an insulated conductor(s) to confine the electric field to the insulation

**SP-OS** Multiple Shielded Pairs or Triads with Overall Shield, instrumentation or thermocouple extension cable

**TC** NEC type designation for power and control tray cable (Article 336)

**TFN** NEC conductor type designation for PVC insulated nylon jacketed conductors in sizes #18 and 16 AWG for use in dry locations

**THERMOCOUPLE CABLE** - A cable consisting of two dissimilar metals or alloys that, when electrically joined at one end can be used to measure temperature. These cables have no voltage rating

**THHN** NEC conductor type designation for PVC insulated nylon jacketed conductors for use in dry locations

**THWN** NEC conductor type designation for PVC insulated nylon jacketed conductors for use in wet or dry locations

**TPPO** Thermoplastic Polyolefin, a thermoplastic jacket material with low smoke characteristics and is free of halogens

**UL** Underwriters Laboratories. An independent organization which examines, tests, lists and periodically inspects equipment to appropriate standards

**URO-J** Underground Residential distribution- Okoguard (EPR) insulation- Okolene Jacket employing a concentric neutral

**USE** Underground Service Entrance cable

## **VERTICAL TRAY FLAME TEST**

Conducted per UL, IEEE or ICEA procedures to demonstrate that a single conductor (1/0 AWG and larger) or multi-conductor cable will not propagate a fire in the defined test.

## **VOLTAGE LEVELS**

Power-Limited - 0-300 Volts

Low Voltage - 600-2000 Volts

Medium Voltage - 2400-69000 Volts

High Voltage - 115kV and above

**VOLTAGE RATING** kV, industry convention to identify voltage levels, phase to phase voltage

**VW-1** Basic flammability test for single conductors; employs a tirrill burner applied intermittently to a Vertical Wire

**XHHW-2** NEC conductor type designation for conductors with Heat and Moisture resistant thermoset insulation for use in 90°C wet or dry locations

**XLPE** Cross-Linked Polyethylene insulating compound

**XLPO** Cross Linked Polyolefin, a thermoset jacket material with low smoke characteristics and is free of halogens

**Z** NEC conductor type designation for conductors with ETFE insulation for use in dry locations

**ZW** NEC conductor type designation for conductors with ETFE insulation for use in wet or dry locations

## **CONDUCTOR IDENTIFICATION INFORMATION**

**E-1** Color sequences for utility conductor identification, see Appendix E, Table E-1, ICEA Standard S-73-532, includes green and white

**E-2** Color sequence for industrial conductor identification, see Appendix E, Table E-2, ICEA Standard S-73-532, excludes green and white

**METHOD-1** Conductor identification, colored compounds with tracers in accordance with the ICEA standard

**METHOD-2** Conductor identification, neutral compounds with tracers in accordance with the ICEA Standard

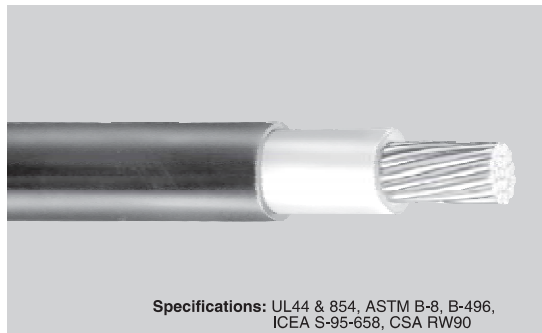
**METHOD-3** Conductor identification, neutral or single colored compounds with surface printing of numbers and color designations in accordance with the ICEA Standard

**METHOD-4** Conductor identification, neutral or single colored compounds with surface printing of numbers in accordance with the ICEA Standard.

**METHOD-5** Conductor identification, individual color coding with braids in accordance with the ICEA Standard



# LOW VOLTAGE SINGLE CONDUCTOR CABLES



Specifications: UL44 & 854, ASTM B-8, B-496,  
ICEA S-95-658, CSA RW90

## OKOGUARD-OKOLON TS-CPE Type RHH or RHW-2 or USE-2, VW-1 600V RW-90, Sun Res

**Construction:** One bare stranded round copper conductor, composite Okoguard-Okolon TS-CPE insulation. Sizes smaller than #8 AWG are compressed round. #8 AWG and larger are compact round.

**Conductor Temperature:** 90°C dry, 90°C wet

**Sizes:** #14 AWG - 1000 kcmil

**Application:** Services, feeders, branch and control circuits for industrial, commercial and electric utility installations, wet or dry locations, direct burial (#8 AWG and larger) in raceways, underground ducts, or lashed to a messenger for aerial installation or cable tray (1/0 AWG and larger). Sizes 1/0 AWG and larger are marked "sunlight resistant, for use in cable tray". Listed by UL as Type RHH/RHW-2, USE-2, and VW-1. Listed by CSA as RW-90, -25C, FT1 (1/0 and larger FT4), outdoor. Sizes 1/0 AWG and larger pass UL 1581, and IEEE 1202 Vertical Tray Flame Test Requirements and are marked for "CT-USE". All sizes meet IEEE 383.

Catalog Number	Conductor Size AWG or kcmil	Number of Strands	Composite Insulation Thickness-mils	Approx. O.D.-Inches	Approx. Net Weight (lbs/M')
112-24-2071	14	7	45	0.17	25
112-24-2101	12	7	45	0.19	34
112-24-2131	10	7	45	0.21	48
112-24-2191	8	7	60	0.27	77
112-24-2221	6	7	75	0.33	123
112-24-2251	4	7	75	0.38	176
112-24-2311	2	7	75	0.43	257
112-24-2351	1/0	19	100	0.56	413
112-24-2371	2/0	19	100	0.60	509
112-24-2411	4/0	19	100	0.70	766
112-24-2431	250	37	130	0.80	944
112-24-2471	350	37	130	0.89	1273
112-24-2531	500	37	130	1.01	1764
112-24-2591	750	61	145	1.21	2625
112-24-2651	1000	61	145	1.36	3443



Specifications: UL44, ASTM B-8, B-496,  
ICEA S-95-658

## OKOGUARD-OKOLON TS-CPE Type RHH or RHW-2 2000V, Sun Res

**Construction:** One bare stranded round copper conductor, composite Okoguard-Okolon TS-CPE insulation. Sizes smaller than #8 AWG are compressed round. #8 AWG and larger are compact round.

**Conductor Temperature:** 90°C dry, 90°C wet

**Sizes:** #14 AWG - 750 kcmil

**Application:** Services, feeders, branch and control circuits for industrial, commercial and electric utility installations, wet or dry locations, in raceways, underground ducts, or lashed to a messenger for aerial installation or cable tray (1/0 AWG and larger). Sizes 1/0 AWG and larger are marked "sunlight resistant, for use in cable tray". Listed by UL as Type RHH/RHW-2 and VW-1. Sizes 1/0 AWG and larger pass UL 1581, and IEEE 1202 Vertical Tray Flame Test Requirements and are marked for "CT-USE".

Catalog Number	Conductor Size AWG or kcmil	Number of Strands	Composite Insulation Thickness-mils	Approx. O.D.-Inches	Approx. Net Weight (lbs/M')
113-24-2071	14	7	60	0.21	30
113-24-2101	12	7	60	0.22	40
113-24-2131	10	7	60	0.25	55
113-24-2191	8	7	85	0.33	91
113-24-2221	6	7	85	0.35	127
113-24-2251	4	7	85	0.41	185
113-24-2311	2	7	85	0.46	264
113-24-2351	1/0	19	110	0.58	424
113-24-2371	2/0	19	110	0.62	517
113-24-2411	4/0	19	110	0.72	777
113-24-2431	250	37	140	0.83	965
113-24-2471	350	37	140	0.92	1297
113-24-2531	500	37	140	1.04	1792
113-24-2591	750	61	155	1.24	2652

# LOW VOLTAGE MULTI CONDUCTOR CABLES



## OKONITE-FMR OKOSEAL Type TC-ER Cable 600V, Sun Res



**Construction:** Multiple stranded copper conductors, sizes smaller than #8 AWG are compressed, sizes #8 AWG and larger are compact stranded, Okonite-FMR insulation, color coded control conductors, flame and moisture resistant fillers with cable tape, Okoseal jacket.

**Conductor Temperature:** 90°C dry, 90°C wet

**Sizes:** #14 AWG - 500 kcmil

**Application:** Feeders and branch circuits in industrial, commercial and electric utility applications; for power, lighting, control, signal, and communication circuits; indoors or outdoors, in cable trays, between cable trays and utilization equipment, in raceways, direct burial, supported by a messenger in outdoor locations, and in cable tray in Class I, Division 2 and in Class II, Division 2 hazardous locations in industrial establishments only. Flame retardant - passes the vertical tray flame test requirements of IEEE 45, 383, 1202 and 1580, UL 1277, UL1309 and ABS listed as Marine Shipboard Cable (OKO-Marine).

### CONTROL CABLES

Catalog Number	Conductor Size AWG (Strands)*	Number of Conductors	Insulation Thickness-mils	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Weight (lbs/M')
202-10-3203	14(7x)	3	30	45	0.40	104
202-10-3204	14(7x)	4	30	45	0.44	126
202-10-3205	14(7x)	5	30	45	0.48	151
202-10-3207	14(7x)	7	30	45	0.52	195
202-10-3212	14(7x)	12	30	60	0.71	332
202-10-3219	14(7x)	19	30	60	0.82	480
202-10-3237	14(7x)	37	30	80	1.14	925
202-10-3403	12(7x)	3	30	45	0.44	134
202-10-3404	12(7x)	4	30	45	0.48	167
202-10-3405	12(7x)	5	30	45	0.52	202
202-10-3407	12(7x)	7	30	60	0.60	281
202-10-3409	12(7x)	9	30	60	0.70	363
202-10-3412	12(7x)	12	30	60	0.78	446
202-10-3419	12(7x)	19	30	80	0.95	697
202-10-3503	10(7x)	3	30	45	0.49	183
202-10-3504	10(7x)	4	30	60	0.57	243

Conductor Identification: Color coding per ICEA Method 1, E-2

\* #8 and larger is compact round conductor

### POWER CABLES

Catalog Number	Conductor Size AWG or kcmil (Strands)*	Number of Phase Conductors	Grounding Conductor (1) Size AWG	Insulation Thickness-mils	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Weight (lbs/M')
202-10-3443	12(7x)	3	12 (2)	30	45	0.48	162
202-10-3543	10(7x)	3	10 (2)	30	45	0.62	223
112-10-3844	8(7x)	3	10 (2)	45	60	0.72	332
112-10-3854	6(7x)	3	8 (2)	45	60	0.80	482
112-10-3864	4(7x)	3	8 (2)	45	60	0.82	703
112-10-3874	2(7x)	3	6 (3)	45	80	0.99	997
112-10-3894	1/0(19x)	3	6 (3)	55	80	1.18	1469
112-10-3904	2/0(19x)	3	6 (3)	55	80	1.26	1819
112-10-3924	4/0(19x)	3	4 (3)	55	80	1.48	2646
112-10-3933	350(37x)	3	3 (3)	65	110	1.88	4301
112-10-3937	500(37x)	3	2 (3)	65	110	2.14	5909

\* #8 and larger is bare compact round conductor

Conductor Identification: Sizes #10 AWG & smaller ICEA Method 1, E-2

Sizes #8 AWG & larger ICEA Method 4 Printing of Numbers

(1) Min. Size - UL permits partitioning of Grounding Conductor

(2) Green Insulated Ground

(3) Bare Uninsulated Ground

# LOW VOLTAGE MULTI CONDUCTOR CABLES

## X-OLENE - OKOSEAL



### TYPE TC CONTROL CABLE (XHHW-2) 600V, Sun Res

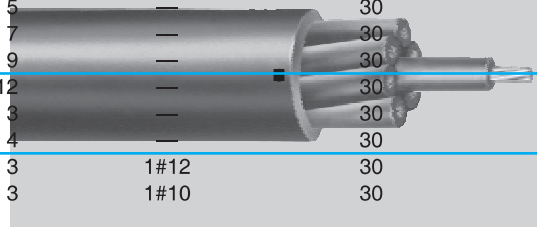
**Construction:** Multiple stranded bare copper conductors, sizes smaller than #8 AWG are compressed, sizes #8 AWG and larger are compact stranded, X-Olene color coded conductors and Okoseal jacket.

**Conductor Temperature:** 90°C wet or dry

**Sizes:** #14 AWG - 750 kcmil

**Application:** Feeders and branch circuits in industrial, commercial and electric utility applications; for power, lighting, control, signal, and communication circuits; indoors or outdoors, in cable trays, in raceways, direct burial, supported by a messenger in outdoor locations, and in cable tray in Class I, Division 2 and Class II, Division 2 hazardous locations in industrial establishments only. UL listed as Type TC, "Sunlight Resistant" and for "Direct Burial".

Catalog Number	Conductor Size AWG or kcmil (Strands)	Number of Conductors	Bare Copper Grounding Conductor Size AWG	Insulation Thickness-mils	Jacket Thickness-mils	Approx. O.D. - Inches	Approx. Net Weight (lbs/M')
202-31-3503	14(7x)	3	—	30	45	0.40	100
202-31-3504	14(7x)	4	—	30	45	0.44	122
202-31-3505	14(7x)	5	—	30	45	0.47	144
202-31-3507	14(7x)	7	—	30	45	0.51	182
202-31-3509	14(7x)	9	—	30	60	0.63	254
202-31-3512	14(7x)	12	—	30	60	0.70	306
202-31-3603	12(7x)	3	—	30	45	0.44	133
202-31-3604	12(7x)	4	—	30	45	0.48	164
202-31-3605	12(7x)	5	—	30	45	0.52	196
202-31-3607	12(7x)	7	—	30	60	0.60	269
202-31-3609	12(7x)	9	—	30	60	0.69	344
202-31-3612	12(7x)	12	—	30	60	0.78	425
202-31-3703	10(7x)	3	—	30	45	0.49	183
202-31-3704	10(7x)	4	—	30	60	0.57	246
202-31-3653	12(7x)	3	1#12	30	45	0.48	140
202-31-3753	10(7x)	3	1#10	30	60	0.56	215



## POWER CABLE

Catalog Number	Conductor Size AWG or kcmil (Strands)	Number of Conductors	Grounding Conductor Size AWG	Insulation Thickness-mils	Jacket Thickness-mils	Approx. O.D. - Inches	Approx. Net Weight (lbs/M')
112-31-3735	8(7x)	3	10	45	60	0.66	356
112-31-3747	6(7x)	3	8	45	60	0.74	423
112-31-3759	4(7x)	3	8	45	60	0.81	693
112-31-3765	2(7x)	3	6	45	80	0.97	1053
112-31-3777	1/0(19x)	3	6	55	80	1.17	1566
112-31-3781	2/0(19x)	3	6	55	80	1.26	1888
112-31-3785	4/0(19x)	3	4	55	80	1.47	2836
112-31-3793	350(37x)	3	3	65	110	1.88	4622
112-31-3797	500(37x)	3	2	65	110	2.13	6336
112-31-3801	750(61X)	3	1	80	110	2.56	9293

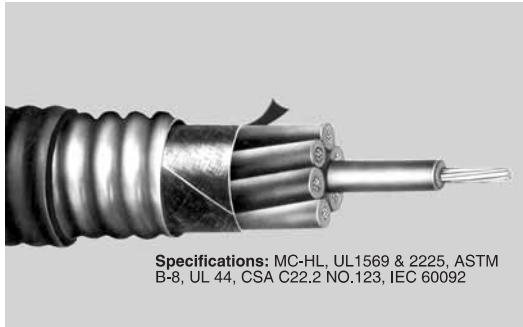
Conductor Identification:

Color Coding per ICEA Method 1, E2 (#6 & smaller)

Color Coding per ICEA Method 3, E2 (#4 & larger)



# LOW VOLTAGE CONTROL MULTI CONDUCTOR CABLES



Specifications: MC-HL, UL1569 & 2225, ASTM B-8, UL 44, CSA C22.2 NO.123, IEC 60092

## C-L-X Type MC & MC-HL FOR CT USE (XHHW-2) 600V Control Cable, Sun Res



UL and ABS listed as Marine Shipboard Cable Type, (CLXM—CWCMC).

**Construction:** Two or more stranded copper conductors, sizes #8 AWG and larger are compact stranded, X-Olene insulated, color coded conductors, ground wire (MC-HL only), fillers (as necessary), binder tape over core, corrugated aluminum C-L-X sheath, with Okoseal jacket overall.

**Conductor Temperature:** 90°C dry or wet

**Sizes:** #14 AWG - #10 AWG

**Application MC & MC-HL:** Economical and versatile alternate to a conduit system; for services, feeders, and branch circuits in industrial and commercial applications; power, lighting, control and signal circuits; indoors or outdoors, in wet or dry locations, direct burial, in cable tray, in raceways, as open runs of cable, as aerial cable on a messenger, and in Class I, Division 2, Class II, Division 2, and Class III hazardous locations. Type MC-HL are listed for use in Class I, Division 1 hazardous locations IEC certified to 60092-350 (1000V).

### TYPE MC CONTROL CABLE (Does not include grounding conductor)

Catalog Number	Conductor Size AWG (Strands)	Number of Conductors	Insulation Thickness-mils	C-L-X O.D.-Inches	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Weight (lbs/M')
546-31-3003	14(7x)	3	30	0.49	50	0.60	153
546-31-3004	14(7x)	4	30	0.53	50	0.64	181
546-31-3005	14(7x)	5	30	0.58	50	0.69	210
546-31-3007	14(7x)	7	30	0.62	50	0.73	254
546-31-3009	14(7x)	9	30	0.71	50	0.82	308
546-31-3012	14(7x)	12	30	0.80	50	0.91	381
546-31-3019	14(7x)	19	30	0.93	50	1.04	537
546-31-3037	14(7x)	37	30	1.24	50	1.35	946
546-31-3083	12(7x)	3	30	0.53	50	0.64	189
546-31-3084	12(7x)	4	30	0.58	50	0.69	226
546-31-3085	12(7x)	5	30	0.62	50	0.73	262
546-31-3087	12(7x)	7	30	0.67	50	0.78	324
546-31-3089	12(7x)	9	30	0.80	50	0.91	405
546-31-3092	12(7x)	12	30	0.89	50	1.00	503
546-31-3099	12(7x)	19	30	1.02	50	1.13	721
546-31-3117	12(7x)	37	30	1.37	50	1.48	1301
546-31-3163	10(7x)	3	30	0.58	50	0.69	238
546-31-3164	10(7x)	4	30	0.67	50	0.78	297
546-31-3167	10(7x)	7	30	0.75	50	0.86	436

Color coding per ICEA method 1, Table E-2

### TYPE MC-HL CONTROL CABLE (Includes grounding conductor(s))

Catalog Number	Cdr Size AWG (Strands)	Number of Ungrounded Conductors	Grounding Conductor size AWG	Insulation Thickness-mils	C-L-X O.D.-Inches	Jacket Thickness-mils	Approx. O.D.-In.	Approx. Net Wt. (lbs/M')
546-31-3403	14(7X)	3	3 x 18 Bare	30	0.53	50	0.64	192
546-31-3404	14(7X)	4	3 x 18 Bare	30	0.58	50	0.69	222
546-31-3406	14(7X)	6	#14 Green Insulated	30	0.62	50	0.73	267
546-31-3408	14(7X)	8	#14 Green Insulated	30	0.71	50	0.82	321
546-31-3411	14(7X)	11	#14 Green Insulated	30	0.80	50	0.91	395
546-31-3418	14(7X)	18	#14 Green Insulated	30	0.93	50	1.04	554
546-31-3436	14(7X)	36	#14 Green Insulated	30	1.24	50	1.35	948
546-31-3453	12(7X)	3	3 x 16 Bare	30	0.58	50	0.69	239
546-31-3454	12(7X)	4	3 x 16 Bare	30	0.67	50	0.77	310
546-31-3456	12(7X)	6	#12 Green Insulated	30	0.67	50	0.78	338
546-31-3458	12(7X)	8	#12 Green Insulated	30	0.80	50	0.91	426
546-31-3461	12(7X)	11	#12 Green Insulated	30	0.89	50	1.00	519
546-31-3468	12(7X)	18	#12 Green Insulated	30	1.02	50	1.13	739
546-31-3486	12(7X)	36	#12 Green Insulated	30	1.37	50	1.48	1302
546-31-3503	10(7X)	3	3 x 14 Bare	30	0.62	50	0.73	303
546-31-3504	10(7X)	4	3 x 14 Bare	30	0.67	50	0.78	348
546-31-3506	10(7X)	6	#10 Green Insulated	30	0.75	50	0.86	451
546-31-3508	10(7X)	8	#10 Green Insulated	30	0.89	50	1.00	568
546-31-3511	10(7X)	11	#10 Green Insulated	30	0.97	50	1.08	704

Color Coding per ICEA Method 1, Table E-2 (for non-grounding conductors)

# LOW VOLTAGE POWER MULTI CONDUCTOR CABLES



## C-L-X

### Type MC-HL FOR CT USE (XHHW-2) 600V, Sun Res

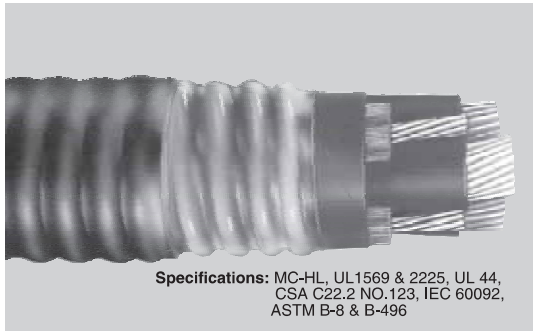
UL and ABS listed as Marine Shipboard Cable Type, CLXM—CWCMC  
CSA listed RA90 FT4 HL

**Construction:** Two or more stranded copper conductors, sizes #8 AWG and larger are compact stranded, X-Olene insulated, color coded conductors, ground wire, fillers, binder tape over core, corrugated aluminum C-L-X sheath, with Okoseal jacket overall.

**Conductor Temperature:** 90°C dry or wet

**Sizes:** #14 AWG - 750 kcmil

**Application:** Economical and versatile alternate to a conduit system; for services, feeders, and branch circuits in industrial and commercial applications; power, lighting, control and signal circuits; indoors or outdoors, in wet or dry locations, direct burial, in cable tray, in raceways, as open runs of cable, as aerial cable on a messenger, and in Class I, II, and III, Division 1 & 2 hazardous locations. Recommended for VFD/PWM drives. IEC certified to 60092-350 (1000V).



Specifications: MC-HL, UL1569 & 2225, UL 44,  
CSA C22.2 NO.123, IEC 60092,  
ASTM B-8 & B-496

## POWER CABLES

Catalog Number	Conductor Size AWG or kcmil (Strands)*	Number of Conductors	Grounding Conductor* Size AWG	Insulation Thickness- mils	C-L-X O.D. - Inches	Jacket Thickness- mils	Approx. O.D.- Inches	Approx. Net Wt. (lbs/M')
546-31-3403	14(7x)	3	3 x 18	30	0.53	50	0.64	160
546-31-3404	14(7x)	4	3 x 18	30	0.58	50	0.69	222
546-31-3453	12(7x)	3	3 x 16	30	0.58	50	0.69	239
546-31-3454	12(7x)	4	3 x 16	30	0.67	50	0.77	310
546-31-3503	10(7x)	3	3 x 14	30	0.62	50	0.73	303
546-31-3504	10(7x)	4	3 x 14	30	0.67	50	0.78	348
571-31-3190	8(7x)	3	3 x 14	45	0.71	50	0.82	405
571-31-3263	8(7x)	4	10	45	0.80	50	0.91	480
571-31-3191	6(7x)	3	3 x 12	45	0.80	50	0.95	500
571-31-3270	6(7x)	4	8	45	0.89	50	0.99	650
571-31-3200	4(7x)	3	3 x 12	45	0.89	50	0.99	735
571-31-3272	4(7x)	4	8	45	0.97	50	1.08	875
571-31-3204	2(7x)	3	3 x 10	45	1.02	50	1.13	1035
571-31-3276	2(7x)	4	6	45	1.15	50	1.26	1310
571-31-3213	1/0(19x)	3	3 x 10	55	1.24	50	1.35	1460
571-31-3216	2/0(19x)	3	3 x 10	55	1.34	50	1.45	1770
571-31-3289	2/0(19x)	4	6	55	1.51	60	1.65	2425
571-31-3224	4/0(19x)	3	3 x 8	55	1.60	60	1.73	2795
571-31-3296	4/0(19x)	4	4	55	1.78	60	1.91	3520
571-31-3228	250(37x)	3	3 x 8	65	1.74	60	1.87	3325
571-31-3236	350(37x)	3	3 x 7	65	1.96	60	2.09	4315
571-31-3308	350(37x)	4	3	65	2.19	60	2.32	5380
571-31-3244	500(37x)	3	3 x 6	65	2.28	75	2.44	5792
571-31-3316	500(37x)	4	2	65	2.49	75	2.65	7520
571-31-3248	750(61x)	3	3 x 5	80	2.75	75	2.92	8575

\* #8 and larger is compact round conductor

Conductor Identification: Surface Printing of Numbers and Colors per ICEA Method 3 - Sizes #4 AWG and larger  
Sizes #6 and smaller Method 1, E-2

\*Minimum Size UL Permits Partitioning of Grounding Conductor, grounds are bare.

THREE SYMMETRICAL GROUNDING CONDUCTORS FOR PWM AND OTHER MODERN AC DRIVE/MOTOR APPLICATIONS

## COMPOSITE POWER & CONTROL CABLES

Catalog Number	Power Conductors No. X Size	Insulation Thickness- mils	Control Conductors No. X Size	Insulation Thickness- mils	C-L-X O.D.- Inches	Grounding Conductor* No. X Size	Jacket Thickness- mils	Cable O.D.- Inches	Approx. Net Wt. (lbs/M')
546-31-3984	3 X 10	30	4 X 12	30	0.75	1 X 10	50	0.86	400
571-31-3657	3 X 8	45	4 X 12	30	0.89	3 X 10	50	1.00	530
571-31-3667	3 X 6	45	4 X 12	30	0.93	1 X 8	50	1.04	685
571-31-3677	3 X 4	45	4 X 12	30	0.97	1 X 8	50	1.08	860

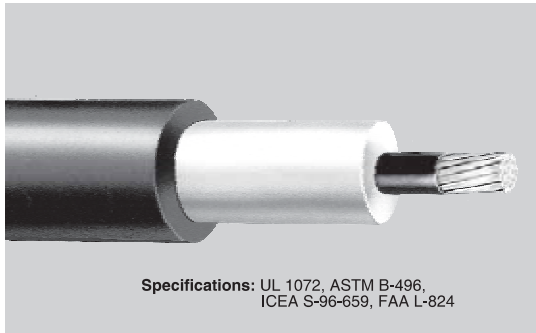
CLX Type MC & MC-HL Conductor Identification: Surface Printing of Numbers and Colors per ICEA Method 3 - Sizes #4 AWG  
and larger; Sizes #6 and smaller Method 1, E-2

\*Minimum Size UL Permits Partitioning of Grounding Conductor, grounds are bare.

# MEDIUM VOLTAGE SINGLE CONDUCTOR POWER CABLES



## OKOGUARD NON-SHIELDED OKOLON TS-CPE 2.4kV Type MV-90, CT USE, RW90, Sun Res FAA L-824 TYPE C AIRPORT LIGHTING CABLE



Specifications: UL 1072, ASTM B-496,  
ICEA S-96-659, FAA L-824

**Construction:** One Okopact® (compact stranded) copper conductor, extruded semiconducting EPR strand screen, Okoguard EPR insulation, Okolon TS-CPE jacket.

**Conductor Temperature:** 90°C

**Sizes:** #6 AWG - 750 kcmil

**Application:** Feeders and branch circuits in electric utility, industrial and commercial applications; may be used in wet or dry locations, in raceways, messenger supported wiring, underground ducts and in cable tray. (1/0 AWG and larger are labeled "FOR CT USE".) Sizes #1 and smaller meet CSA FT1; sizes 1/0 and larger meet CSA FT4. Sizes #6 and #8 AWG are identified as FAA L-824 Type B and are rated 5kV. CSA C22.2 listed as RW90, FT-4 (1/0 & larger), FT-1 (#1 and smaller) and -25C.

Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness-mils	Jacket Thickness-mils	Approx. O.D.- In.	Approx. Net Wt. (lbs/M')
114-24-2213	8	125	80	0.60	215
114-24-2217	6	125	80	0.64	260
114-24-2219	4	125	80	0.69	328
114-24-2221	2	125	80	0.74	427
114-24-2225	1/0	125	80	0.81	580
114-24-2227	2/0	125	80	0.85	682
114-24-2231	4/0	125	95	0.98	991
114-24-2237	350	140	110	1.19	1555
114-24-2243	500	140	110	1.31	2075
114-24-2249	750	155	125	1.55	3034

## OKOGUARD SHIELDED OKOSEAL 5/8kV Type MV-105, Sun Res



**5kV-133% or 8kV-100% INSULATION LEVEL**

**Construction:** One Okopact® (compact stranded) copper conductor, extruded semiconducting EPR strand screen, Okoguard EPR insulation, extruded semiconducting EPR insulation screen, bare copper shielding tape with 12.5% overlap, Okoseal jacket.

**Conductor Temperature:** 105°C

**Sizes:** #6 AWG - 750 kcmil

**Application:** Feeders and branch circuits in electric utility, industrial and commercial applications; may be used in wet or dry locations, in raceways, messenger supported wiring, and in underground ducts, direct buried (if installed in a system with a grounding conductor in close proximity) or messenger supported in industrial and electric utilities.

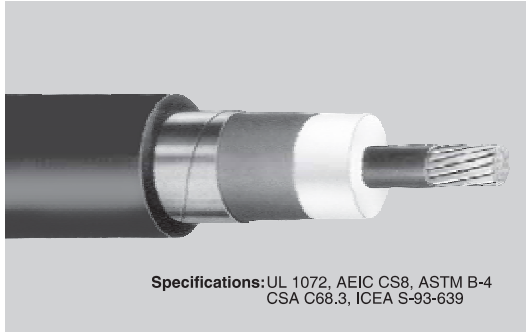


Specifications: UL 1072, AIEC CS8, ASTM  
B-496, ICEA S-93-639

Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness-mils	Approx O.D. (in.) over: Insulation	Screen	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
114-23-3817	6	115	0.45	0.51	60	0.65	285
114-23-3819	4	115	0.49	0.55	60	0.69	355
114-23-3821	2	115	0.55	0.61	60	0.75	455
114-23-3825	1/0	115	0.61	0.67	60	0.82	610
114-23-3827	2/0	115	0.66	0.72	60	0.85	710
114-23-3831	4/0	115	0.76	0.82	80	0.99	1035
114-23-3833	250	115	0.81	0.86	80	1.04	1180
114-23-3837	350	115	0.90	0.96	80	1.14	1535
114-23-3843	500	115	1.02	1.10	80	1.28	2050
114-23-3849	750	115	1.20	1.26	80	1.46	2935



# MEDIUM VOLTAGE SINGLE CONDUCTOR POWER CABLES



## OKOGUARD SHIELDED OKOSEAL 5/8kV Type MV-105 FOR CT USE, Sun Res and CSA LISTED

5kV-133% or 8kV-100% INSULATION LEVEL

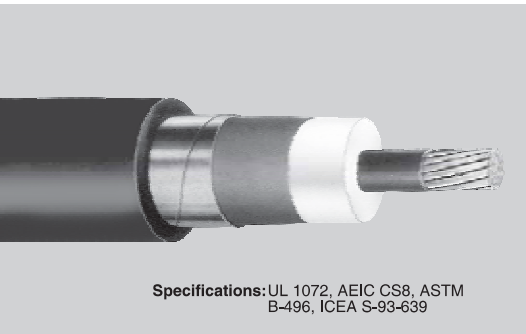
**Construction:** One Okopact® (compact stranded) copper conductor, extruded semiconducting EPR strand screen, Okoguard EPR insulation, extruded semiconducting EPR insulation screen, bare copper shielding tape with 25% overlap, Okoseal jacket.

**Conductor Temperature:** 105°C

**Sizes:** 1/0 AWG - 750 kcmil

**Application:** Feeders and branch circuits in electric utility, industrial and commercial applications; may be used in wet or dry locations, in raceways, messenger supported wiring, and in underground ducts, direct buried (if installed in a system with a grounding conductor in close proximity) or messenger supported in industrial and electric utilities. UL listed for cable tray use per NEC Article 392. Meets UL 1072, IEEE 383, IEEE 1202 & CSA C68.3 FT-4, -25C.

Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness-mils	Approx O.D. (in.) over: Insulation	Approx O.D. (in.) over: Screen	Jacket Thickness-mils	Approx. O.D.-In.	Approx. Net WT. (lbs/M')
114-23-3824	1/0	115	0.61	0.67	60	0.81	615
114-23-3826	2/0	115	0.65	0.71	60	0.85	720
114-23-3832	4/0	115	0.75	0.81	80	0.99	1030
114-23-3834	250	115	0.79	0.86	80	1.05	1185
114-23-3838	350	115	0.89	0.95	80	1.14	1540
114-23-3846	500	115	1.01	1.07	80	1.26	2055
114-23-3873	750	115	1.19	1.26	80	1.45	2940



## OKOGUARD SHIELDED OKOSEAL 15kV Type MV-105, Sun Res

133% INSULATION LEVEL

**Construction:** One Okopact® (compact stranded) copper conductor, extruded semiconducting EPR strand screen, Okoguard EPR insulation, extruded semiconducting EPR insulation screen, bare copper shielding tape with 12.5% overlap, Okoseal jacket.

**Conductor Temperature:** 105°C

**Sizes:** #2 AWG - 1000 kcmil

**Application:** Feeders and branch circuits in electric utility, industrial and commercial applications; may be used in wet or dry locations, in raceways, messenger supported wiring, and in underground ducts, direct buried (if installed in a system with a grounding conductor in close proximity) or messenger supported in industrial and electric utilities.

Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness-mils	Approx O.D. (in.) over: Insulation	Approx O.D. (in.) over: Screen	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
115-23-3111	2	220	0.76	0.82	80	1.01	680
115-23-3115	1/0	220	0.83	0.89	80	1.07	845
115-23-3117	2/0	220	0.87	0.93	80	1.12	960
115-23-3121	4/0	220	0.97	1.03	80	1.22	1270
115-23-3123	250	220	1.03	1.09	80	1.27	1430
115-23-3127	350	220	1.12	1.20	80	1.38	1825
115-23-3131	500	220	1.24	1.31	80	1.48	2365
115-23-3135	750	220	1.41	1.49	80	1.68	3270
115-23-3139	1000	220	1.56	1.66	110	1.91	4285

# MEDIUM VOLTAGE SINGLE CONDUCTOR POWER CABLES



## OKOGUARD SHIELDED OKOLON TS-CPE 15kV Type MV-105, Sun Res and FOR CT USE

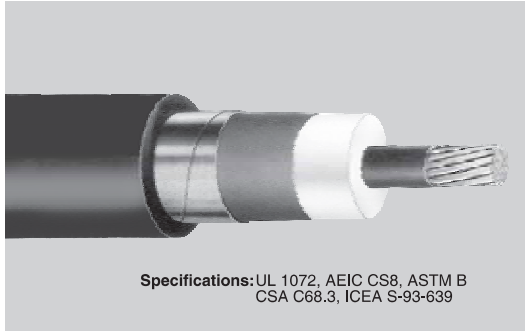
### 133% INSULATION LEVEL

**Construction:** One Okopact® (compact stranded) stranded copper conductor, extruded semiconducting EPR strand screen, Okoguard EPR insulation, extruded semiconducting EPR insulation screen, coated copper shielding tape with 25% overlap, Okolon TS-CPE jacket.

**Conductor Temperature:** 105°C

**Sizes:** 500-750 kcmil

**Application:** Feeders and branch circuits in electric utility, industrial and commercial applications; may be used in wet or dry locations, in raceways, and in underground ducts, direct buried (if installed in a system with a grounding conductor in close proximity) or messenger supported in industrial and electric utilities. UL Listed for cable tray use per NEC Article 392. Meets UL 1072, IEEE 383, IEEE 1202, and CSA C68.3 FT4, -25C.



Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness-mils	Approx O.D. (in.) over:		Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
115-23-2131	500	220	1.24	1.31	.080	1.55	2415
115-23-2135	750	220	1.41	1.49	.080	1.68	3290

## OKOGUARD-SHIELDED OKOSEAL 15kV Type MV-105 FOR CT USE, Sun Res



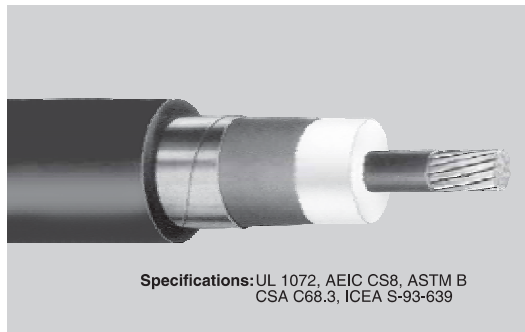
### 133% INSULATION LEVEL

**Construction:** One Okopact® (compact stranded) copper conductor, extruded semiconducting EPR strand screen, Okoguard EPR insulation, extruded semiconducting EPR insulation screen, copper shielding tape with 25% overlap, Okoseal jacket.

**Conductor Temperature:** 105°C

**Sizes:** #1/0 AWG - 1000 kcmil

**Application:** Feeders and branch circuits in electric utility, industrial and commercial applications; may be used in wet or dry locations, in raceways, messenger supported wiring, and in underground ducts, direct buried (if installed in a system with a grounding conductor in close proximity) or messenger supported in industrial and electric utilities. UL listed for cable tray use per NEC Article 392. Meets UL 1072, IEEE 383, IEEE 1202 and CSA C68.3, FT4, -25C.



Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness-mils	Approx O.D. (in.) over:		Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
115-23-3230	1/0	220	0.83	0.89	80	1.07	850
115-23-3232	2/0	220	0.87	0.93	80	1.12	850
115-23-3236	4/0	220	0.97	1.03	80	1.22	980
115-23-3238	250	220	1.03	1.09	80	1.27	1420
115-23-3240	350	220	1.12	1.20	80	1.38	1835
115-23-3242	500	220	1.24	1.31	80	1.48	2375
115-23-3243	750	220	1.41	1.49	80	1.68	3280
115-23-3244	1000	220	1.56	1.66	110	1.91	4260

# MEDIUM VOLTAGE SINGLE CONDUCTOR POWER CABLES



## OKOGUARD-SHIELDED OKOSEAL 35kV (25kV\*) Type MV-105, Sun Res

### 100% and 133% INSULATION LEVEL

**Construction:** One Okopact® (compact stranded) copper conductor, extruded semiconducting EPR strand screen, Okoguard insulation, extruded semiconducting EPR insulation screen, copper shielding tape with 12.5% overlap, Okoseal jacket.

**Conductor Temperature:** 105°C

**Sizes:** #1/0 AWG - 500 kcmil

**Application:** Feeders and branch circuits in electric utility, industrial and commercial applications; may be used in wet or dry locations, in raceways, messenger supported wiring, and in underground ducts, direct buried (if installed in a system with a grounding conductor in close proximity) or messenger supported in industrial and electric utilities.

Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness-mils	Approx O.D. (in.) over: Insulation	Approx O.D. (in.) over: Screen	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
115-23-3516*	1/0	345 (100%)	1.09	1.17	80	1.35	1150
115-23-3521*	4/0	345 (100%)	1.23	1.31	80	1.49	1650
115-23-3531*	500	345 (100%)	1.49	1.57	80	1.75	2764
115-23-3656	1/0	420 (133%)	1.25	1.33	80	1.51	1355
115-23-3661	4/0	420 (133%)	1.39	1.47	80	1.65	1835

\*Cables with 345 mils of insulation are rated 25kV - 133%, 35kV-100% and marked.



## OKOGUARD-SHIELDED OKOSEAL 69kV, Sun Res

### 100% INSULATION LEVEL

**Construction:** One Okopact® (compact stranded) copper conductor, extruded semiconducting EPR strand screen, Okoguard EPR insulation, extruded semiconducting EPR insulation screen, copper shielding tape with 25% overlap, Okoseal jacket.

**Conductor Temperature:** 105°C

**Sizes:** 500- 1000 kcmil

**Application:** Primary circuits in utility generating plants, and in distribution applications.

Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness-mils	Approx O.D. (in.) over: Insulation	Approx O.D. (in.) over: Screen	Jacket Thickness-mils	Approx. O.D.-In.	Approx. Net Wt. (lbs/M')
115-22-3771	500	650	2.12	2.22	110	2.47	4179
115-22-3777	1000	650	2.44	2.54	140	2.85	6389



# MEDIUM VOLTAGE SINGLE CONDUCTOR POWER CABLES



## OKOGUARD - 105°C

### URO-J/15kV, 25kV AND 35kV, Sun Res

100% and 133% INSULATION LEVEL - FULL or 1/3 NEUTRAL

**Construction:** One stranded or solid aluminum or copper conductor, extruded semiconducting EPR strand screen, Okoguard EPR insulation, extruded semiconducting EPR insulation screen, and copper concentric neutral wires spaced uniformly around the insulation screen, Okolene jacket with red stripes and lightning bolt.

**Conductor Temperature:** 105°C Continuous, 140°C Emergency.

**Sizes:** #2 AWG - 1000 kcmil

**Application:** Provides circuit reliability in primary underground distribution systems. Cable can be directly buried or installed in underground duct or conduit.

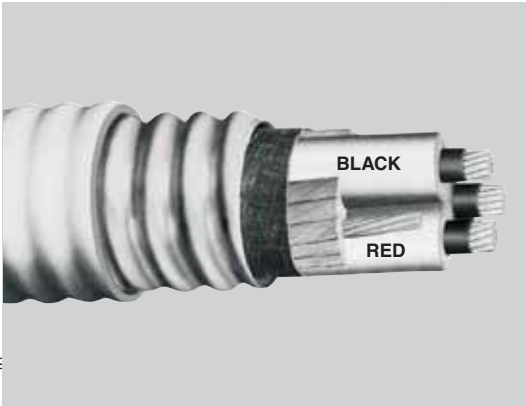
Catalog Number	Aluminum or Copper Conductor Size	Nominal Diameter Over Insulation (in.)	Nominal Diameter Over Insulation Shield (in.)	Copper (1) Neutral Size	Nominal O.D. (in.)	Net Weight lbs/1000 ft.	Ship Weight (lbs/M')
<b>15kV-175 Mil Wall - 100% Insulation Level</b>							
161-23-2060	2 Strd	.66	.73	Full (10X#14)	0.97	513	603
161-23-2072	1/0 Strd	.75	.83	Full (16X#14)	1.06	667	725
<b>15kV-220 Mil Wall - 133% Insulation Level</b>							
(2) 141-23-9460	2 Strd Copper	.75	.82	Full (16X#14)	1.06	792	871
161-23-3057	2 Sol	.74	.82	Full (10X#14)	1.06	577	635
161-23-3060	2 Strd	.77	.84	Full (10X#14)	1.08	595	662
161-23-9525	1/0 Sol	.81	.89	Two-Third (10X#14)	1.12	656	736
161-23-3069	1/0 Sol	.81	.89	Full (16X#14)	1.12	726	792
161-23-3072	1/0 Strd	.84	.92	Full (16X#14)	1.15	752	818
160-23-3081	4/0 Strd	.99	1.06	One-Third (11X#14)	1.30	889	1002
160-23-3096	750 Strd	1.48	1.58	One-Third (15X#10)	1.96	2237	2518
<b>15kV-220 Mil Wall - 133% Insulation Level-Filled Strand</b>							
163-23-3060	2 Strd	.77	.85	Full (10X#14)	1.08	602	669
163-23-3072	1/0 Strd	.84	.92	Full (16X#14)	1.15	753	820
162-23-3081	4/0 Strd	.99	1.06	One-Third (11X#14)	1.30	891	1005
162-23-3090	350 Strd	1.16	1.26	One-Third (18X#14)	1.50	1254	1425
162-23-3093	500 Strd	1.29	1.39	One-Third (16X#12)	1.73	1738	1966
162-23-3096	750 Strd	1.48	1.58	One-Third (15X#10)	1.95	2244	2468
162-23-3099	1000 Strd	1.63	1.77	One-Third (18X.1066)	2.15	2808	3093
<b>25kV-260 Mil Wall - 100% Insulation Level</b>							
161-23-4069	1/0 Sol	.89	.97	Full (16X#14)	1.20	803	870
<b>25kV-260 Mil Wall - 100% Insulation Level-Filled Strand</b>							
163-23-4072	1/0 Strd	.92	1.00	Full (16X#14)	1.23	833	899
162-23-4081	4/0 Strd	1.07	1.17	One-Third (11X#14)	1.40	1011	1129
162-23-4093	500 Strd	1.37	1.47	One-Third (16X#12)	1.80	1784	1988
162-23-4096	750 Strd	1.56	1.70	One-Third (15X#10)	2.08	2450	2754
162-23-4099	1000 Strd	1.71	1.85	One-Third (18 X .1066)	2.22	2953	3323
<b>35kV-345 Mil Wall - 100% Insulation Level</b>							
161-23-6072	1/0 Strd	1.10	1.20	Full (16X#14)	1.44	1061	1179
<b>35kV-345 Mil Wall - 100% Insulation Level-Filled Strand</b>							
163-23-6072	1/0 Strd	1.10	1.20	Full (16X#14)	1.44	1063	1181

(1) Individual wire size and count may vary. The resulting combination meets the 1/3rd, 2/3rds or full neutral, size requirement.

(2) Catalog Number 141-23-9460 is listed and shipped with UL's MV-90 rating printed on the jacket. All other cables shown are available with same listing on a special order basis.

# MEDIUM VOLTAGE MULTI CONDUCTOR POWER CABLES

## OKOGUARD NON-SHIELDED C-L-X 2.4kV FOR CT USE, Sun Res



Specifications: MC-HL UL 1569 & 1072  
ASTM B-496, ICEA S-96-655

board Cable Type CLXM—CWCMC  
LEVEL

stranded copper conductors, extruded EPR  
over individual conductors, Okoguard EPR  
grounding conductors, fillers and binder tape  
in C-L-X sheath with yellow Okoseal jacket.

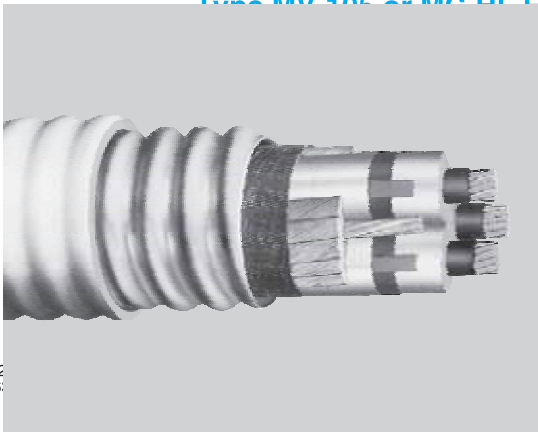
versatile alternate to a conduit system; for  
in electric utility, industrial, and commercial  
in wet or dry locations, direct burial, in cable  
cable, as aerial cable on a messenger, and in  
2 hazardous locations. Recommended for

Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness -mils	Insulation O.D. Inches	Grounding Conductor* Size AWG	C-L-X O.D. (In.)	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
571-21-3200	4	90	0.44	3 x 10	1.19	50	1.30	960
571-21-3204	2	90	0.49	3 x 10	1.34	50	1.45	1270
571-21-3217	2/0	90	0.60	3 x 8	1.60	60	1.73	2160
571-21-3224	4/0	90	0.70	3 x 7	1.83	60	1.96	3075
571-21-3236	350	90	0.85	3 x 6	2.19	60	2.32	4705
571-21-3244	500	90	0.96	3 x 5	2.45	75	2.61	6405

\*Minimum Size UL Permits Partitioning of Grounding Conductor

THREE SYMMETRICAL GROUNDING CONDUCTORS FOR PWM AND OTHER MODERN AC DRIVE/MOTOR APPLICATIONS

## OKOGUARD SHIELDED C-L-X 5/8kV Type MV-105 or MC-HL FOR CT USE, Sun Res



Specifications: MC-HL UL 1569 & 1072  
ASTM B-496, ICEA S-93-6

board Cable Type CLXM—CWCMC  
V-100% Insulation Level

stranded copper conductors, extruded  
en, Okoguard EPR insulation, extruded  
en, phase identification strips, and copper  
er individual conductors, with 3 stranded  
and binder tape over the core, corrugated  
Okoseal jacket.

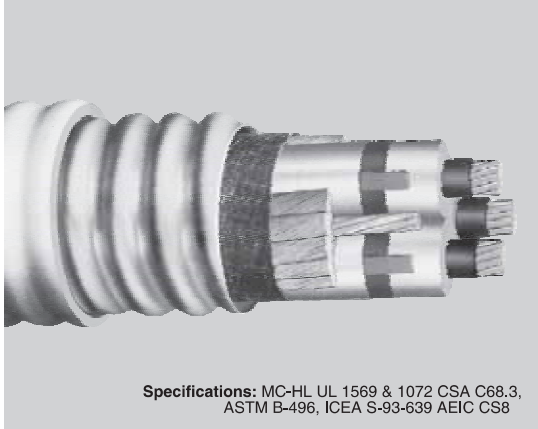
satile alternate to a conduit system; for  
in electric utility, industrial, and commercial  
wet or dry locations, direct burial, in cable  
ble, as aerial cable on a messenger, and in  
hazardous locations. Recommended for

Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness -mils	Insulation O.D. Inches	Grounding Conductor* Size AWG	C-L-X O.D. (In.)	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
571-22-3706	2	115	0.54	3 x 10	1.64	60	1.78	1726
571-22-3717	2/0	115	0.65	3 x 8	1.92	60	2.05	2621
571-22-3725	4/0	115	0.75	3 x 7	2.15	60	2.28	3645
571-22-3838	350	115	0.89	3 x 6	2.45	75	2.61	5040
571-22-3846	500	115	1.01	3 x 5	2.75	75	2.92	7132

\*Minimum Size UL Permits Partitioning of Grounding Conductor

THREE SYMMETRICAL GROUNDING CONDUCTORS FOR PWM AND OTHER MODERN AC DRIVE/MOTOR APPLICATIONS

# MEDIUM VOLTAGE MULTI CONDUCTOR POWER CABLES



## OKOGUARD SHIELDED C-L-X 15kV Type MV-105 or MC-HL FOR CT USE, Sun Res

UL and ABS listed as Marine Shipboard Cable Type CLXM—CWC MC

### 133% INSULATION LEVEL

**Construction:** Three compact stranded copper conductors, extruded semiconducting EPR strand screen, Okoguard EPR insulation, extruded semiconducting EPR insulation screen, phase identification strips, and copper shield tape with 12.5% overlap, over individual conductors, with one stranded copper grounding conductor, fillers, and binder tape over the core, corrugated aluminum C-L-X sheath with or without red Okoseal jacket.

**Conductor Temperature:** 105°C

**Sizes:** # 2 AWG - 750 kcmil

**Application:** Economical and versatile alternate to a conduit system; for services, feeders, and branch circuits in electric utility, industrial, and commercial application; power lighting, control and signal circuits; indoors or outdoors, in wet or dry locations, direct burial, in cable tray, in raceways, as open runs of cable, as aerial cable on a messenger, and in Class I, Class II, and Class III, Division 1 & 2 hazardous locations.

Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness-mils	Insulation O.D. Inches	Grounding Conductor Size AWG	C-L-X O.D. (In.)	Jacket Thickness-mils	Approx. O.D. Inches	Approx. Net Wt. (lbs/M')
571-23-3504	2	220	0.76	6	2.15	60	2.28	2468
571-23-3516	2/0	220	0.87	4	2.40	75	2.56	3625
571-23-3524	4/0	220	0.97	3	2.62	75	2.79	4430
571-23-3536	350	220	1.12	2	3.03	85	3.21	6440
571-23-3544	500	220	1.24	1	3.32	85	3.50	8371
571-23-3548	750	220	1.41	1/0	3.80	85	3.98	11426



## OKOGUARD-SHIELDED OKOSEAL 5/8kV & 15kV Type MV-105, Sun Res

5kV 133% & 8kV 100%, and 15kV 133% INSULATION LEVEL

UL Listed for use in Cable Trays

**Construction:** Three compact stranded copper conductors, extruded semiconducting EPR strand screen, Okoguard EPR insulation, extruded semiconducting insulation screen, phase identification strips (red, black, blue) and copper shield tape over individual conductors, with one bare stranded copper grounding conductor, fillers, and binder tape over the core and covered with a black flame retardant PVC jacket (sizes 4/0 and larger, the jacket is our arctic grade PVC).

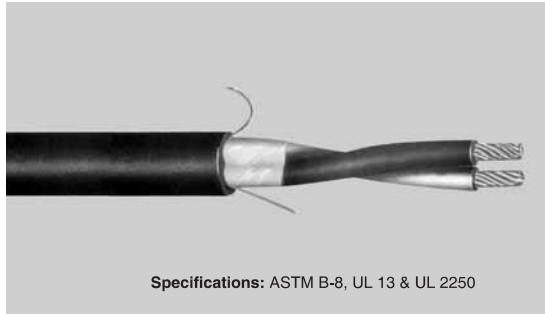
**Conductor Temperature:** 105°C

**Sizes:** #6 AWG - 500 kcmil

**Application:** For services, feeders, and branch circuits in electric utility, industrial, and commercial application; power lighting, control and signal circuits; indoors or outdoors, in wet or dry locations, direct burial, in cable tray, in raceways, as open runs of cable and as aerial cable on a messenger.

5/8kV	Catalog Number	Conductor Size AWG or kcmil	Insulation Thickness-mils	Insulation O.D. Inches	Grounding Conductor Size AWG	Jacket Thickness-mils	Approx. O.D. Inches	Approx. Net Wt. (lbs/M')
	114-23-3630	6	115	0.44	6	80	1.31	1025
	114-23-3640	2	115	0.54	6	80	1.53	1570
	114-23-3648	2/0	115	0.65	4	110	1.82	2530
	114-23-3736	4/0	115	0.75	3	110	2.04	3490
	114-23-3772	350	115	0.89	2	110	2.36	5110
	114-23-3782	500	115	1.01	1	110	2.65	6860
15kV								
	115-23-3802	2	220	0.76	6	110	2.06	2290
	115-23-3806	2/0	220	0.87	4	110	2.29	3235
	115-23-3808	4/0	220	0.97	3	110	2.51	4255
	115-23-3812	350	220	1.12	2	140	2.93	6240
	115-23-3814	500	220	1.24	1	140	3.18	8010

# INSTRUMENTATION CABLES



Specifications: ASTM B-8, UL 13 & UL 2250

## OKOSEAL TYPE P-OS INSTRUMENTATION CABLES



### Type ITC/PLTC/FPL Cable/300V Rated 105°C, Sun Res

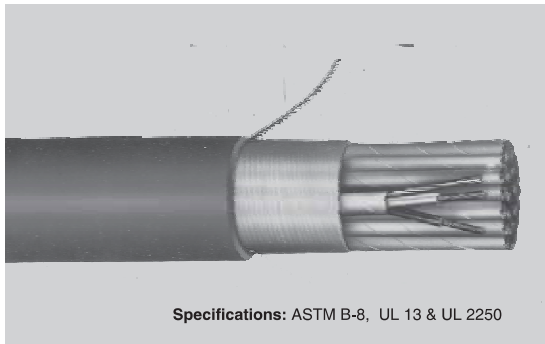
**Construction:** Stranded copper conductors, Okoseal insulation, color coded, black/white twisted into one pair or black/white/red triad or groups of pairs or triads, numeric print group identification, multiple groups assembled with communication wire, aluminum/polyester shield and coated copper drain wire, rip cord, Okoseal jacket.

**Sizes:** #18 & #16 AWG

**Application:** For use on Class 2 or 3 Power-Limited circuits where shielding against external interference is required, but interference between groups is not required; indoors or outdoors, in cable trays, in raceways, supported by a messenger wire; in Class I, Division 2 or Class II, Division 2 or Class III, Division 2 hazardous locations. Also for use as power limited fire protective signaling cable (FPL) per NEC Code 760. For use on ITC non class 2 or 3 circuits up to 150 volts and 5 amps (750VA). Meets UL-1581 and IEEE 383 vertical tray flame tests.

### Single Pair/Triad P-OS Cables

Catalog Number	Conductor Size AWG (Strands)	Number of Pairs	Number of Triads	Insulation Thickness-mils	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
264-10-3301	18(7X)	1		15	35	.23	35
264-10-4401	16(7X)	1		15	35	.25	47
264-15-3301	18(7X)		1	15	35	.24	43
264-15-4401	16(7X)		1	15	35	.26	58



Specifications: ASTM B-8, UL 13 & UL 2250

## OKOSEAL TYPE SP-OS INSTRUMENTATION CABLES



### Type ITC/PLTC/FPL Cable/300V Rated 105°C, Sun Res

**Construction:** Stranded copper conductors, Okoseal insulation, color coded black/white, twisted into groups of pairs or black/white/red triads, numeric print group identification, aluminum/polyester shield and coated copper drain wire over each group with 100% isolation between group shields, multiple groups assembled with communication wire, aluminum/polyester shield and coated copper drain wire overall, rip cord, Okoseal jacket.

**Sizes:** #18 & #16 AWG

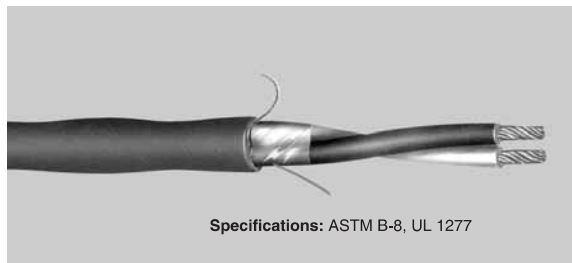
**Application:** For use on Class 2 or 3 Power-Limited circuits where low level signals require shielding both from adjacent groups as well as external sources; indoors or outdoors, in cable trays, in raceways, supported by a messenger wire; in Class I, Division 2 or Class II, Division 2 or Class III, Division 2 hazardous locations; suitable for direct burial. Also for use as power limited fire protective signaling cable (FPL) per NEC Code 760. For use on ITC non class 2 and 3 circuits up to 150 volts and 5 amps (750VA). Meets UL-13 and IEEE 383 and 1202 vertical tray flame tests.

### Multi-Pair/Triad SP-OS Cables

Catalog Number	Conductor Size AWG (Strands)	Number of Pairs	Number of Triads	Insulation Thickness-mils	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
261-10-3304	18(7X)	4		15	50	.47	133
261-10-3308	18(7X)	8		15	50	.56	223
261-10-3312	18(7X)	12		15	60	.69	330
261-10-3324	18(7X)	24		15	70	.98	614
261-10-3336	18(7X)	36		15	70	1.14	861
261-10-4402	16(7X)	2		15	50	.43	116
261-10-4404	16(7X)	4		15	50	.51	179
261-10-4408	16(7X)	8		15	60	.68	323
261-10-4412	16(7X)	12		15	60	.81	456
261-10-4424	16(7X)	24		15	70	1.10	860
261-15-4408	16(7X)		8	15	60	.74	418
261-15-4412	16(7X)		12	15	70	.93	615



# INSTRUMENTATION CABLES



## OKOSEAL-N TYPE P-OS



### Type TC Cable/600V Rated 90°C dry, 75°C wet, Sun Res

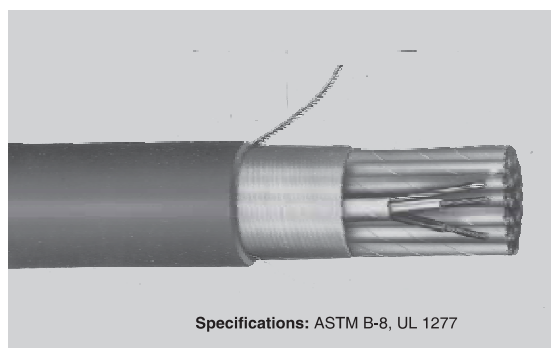
**Construction:** Stranded copper conductors, Okoseal insulation, nylon jacket, color coded black/white, twisted into one pair or black/white/red triad or groups of pairs or triads, numeric print group identification, multiple groups assembled, aluminum/polyester shield and coated stranded copper drain wire, rip cord, Okoseal jacket.

**Sizes:** #18, #16 & #14 AWG

**Application:** For use on Class 1 Remote-Control and Signaling circuits or where a 600V cable is desired, as instrumentation, process control and computer cable, transmitting signals at levels above 100 millivolts, except in areas subject to abnormally high current or voltage interference such as proximity to large motors, generators and substations. Suitable for installation in wet or dry locations, may be installed in cable tray, rigid metal conduit, intermediate metal conduit, electrical metallic tubing, or other approved raceways. Authorized in Class I, Division 2 or Class II, Division 2 or Class III, Division 2 hazardous locations. Also for use as non power limited fire protective signaling cable (NPLF) per NEC Code 760. Meets UL-1277 and IEEE 383 vertical tray flame tests.

## Single Pair/Triad P-OS Cables

Catalog Number	Conductor Size AWG (Strands)	Number of Pairs	Number of Triads	Insulation Thickness-mils	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
264-60-3301	18(7X)	1		15/4	45	.27	48
264-60-4401	16(7X)	1		15/4	45	.29	56
264-60-5501	14(7X)	1		15/4	45	.32	75
264-65-4401	16(7X)		1	15/4	45	.31	69



## OKOSEAL-N TYPE SP-OS



### Type TC Cable/600V Rated 90°C dry, 75°C wet, Sun Res

**Construction:** Stranded copper conductors, Okoseal insulation with nylon covering on primaries, color coded black/white, twisted into groups of pairs or black/white/red triads, numeric print group identification, aluminum/polyester shield and coated stranded copper drain wire over each group with 100% isolation between group shields, multiple groups assembled, aluminum-polyester shield and coated stranded copper drain wire overall, rip cord, Okoseal jacket.

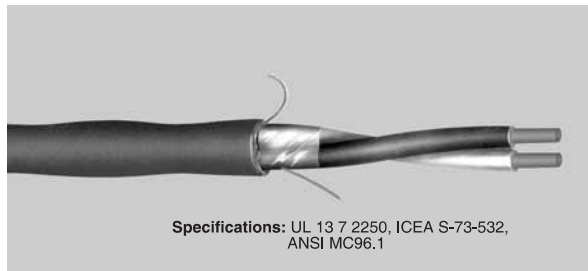
**Sizes:** #16 AWG

**Application:** For use on Class 1 Remote-Control and Signaling circuits or where a 600V rated cable is desired; for control, signal, and communication circuits; indoors or outdoors, in cable trays, in raceways, direct burial, supported by a messenger in outdoor locations, and in cable tray in Class I, Division 2 or Class II, Division 2 or Class III, Division 2 hazardous locations. Also for use as non power limited fire protective signaling cable (NPLF) per NEC Code 760. Meets UL 1277, IEEE 383 and IEEE 1202 (sizes 4 pair #16 and larger).

## Multi-Pair/Triad SP-OS Cables

Catalog Number	Conductor Size AWG (Strands)	Number of Pairs	Number of Triads	Insulation Thickness-mils	Jacket Thickness-mils	Approx. O.D.-Inches	Approx. Net Wt. (lbs/M')
261-60-4402	16(7X)	2		15/4	45	.44	114
261-60-4404	16(7X)	4		15/4	60	.58	198
261-60-4408	16(7X)	8		15/4	60	.72	357
261-60-4412	16(7X)	12		15/4	80	.91	515
261-60-4424	16(7X)	24		15/4	80	1.18	925
261-65-4408	16(7X)		8	15/4	80	.79	478
261-65-4412	16(7X)		12	15/4	80	1.00	674

# INSTRUMENTATION CABLES



## OKOSEAL TYPE P-OS THERMOCOUPLE Type ITC/PLTC Cable/300V Rated 105°C, Sun Res

**Construction:** Solid thermocouple alloys, Okoseal insulation, ASA/ISA color coded, twisted into one pair or groups of pairs, numeric print group identification, aluminum/polyester shield and coated stranded copper drain wire over each group with 100% isolation between group shields. Multiple groups assembled with communication wire, aluminum/polyester shield and coated stranded copper drain wire overall, rip cord, color coded flame retardant Okoseal jacket.

**Sizes:** #16 AWG

**Application:** :PLTC for use on Class 2 or 3 Power-Limited critical circuits and ITC for use on non-classified critical circuits where complete isolation is required between pairs and from external interference. Suitable for installation in wet or dry locations and conductor temperatures to 105°C, may be installed in cable tray, rigid metal conduit, electrical metallic tubing, or other approved raceways. Type PLTC and ITC is authorized for use in Class I, Division 2 or Class II, Division 2 or Class III, Division 2 hazardous locations. Meets UL 1581 and IEEE 383 vertical tray flame tests.

### Single Pair P-OS Cable

ASA/ISA TYPE	Catalog Number	Conductor Size AWG (Strands)	Number of Pairs	Insulation Thickness-mils	Jacket Thickness-mils	Approx. O.D.-In.	Approx. Net Wt. (lbs/M')
EX	284-20-1401	16(1X)	1	15	35	0.24	44
JX	284-20-2401	16(1X)	1	15	35	0.24	44
KX	284-20-3401	16(1X)	1	15	35	0.24	44



## C-L-X OKOSEAL TYPE P-OS THERMOCOUPLE Type ITC/PLTC Cable/300V Rated 105°C for CT Use, Sun Res

**Construction:** Solid thermocouple alloys, Okoseal insulation, ASA/ISA color coded, twisted into one pair aluminum/polyester shield and coated stranded copper drain wire, rip cord, inner flame retardant Okoseal jacket, corrugated aluminum C-L-X sheath, overall Okoseal jacket.

**Sizes:** #16 AWG

**Application:** Okonite Type C-L-X P-OX (Pair/Triad-Overall Shield) Thermocouple Extension cables are designed for use as instrumentation and process control cables in ITC non-classified or labeled circuits up to 150 volts and 5 amps (750VA) and in Class 2 or 3 Power-Limited circuits where shielding against external interference is required, but shielding against interference among groups is no required; indoors or outdoors; in wet or dry location with conductor operating temperatures up to 105°C; in cable trays; in raceways; supported by a messenger wire; under raised floors; for direct burial. Suitable Class I, Division 2, Class II, Division 2, or Class III, Division 2 and Class I, Zone 2 hazardous locations. The C-L-X sheath provides physical protection against mechanical damage. It may be installed in both exposed and concealed work, secured to supports not greater than 6 feet apart. Meets UL 1581, IEEE 383 and IEEE 1202 vertical tray flame test. Also, passes 210,000 BTU vertical flame tray test per ICEA T-29-520.

### 300V C-L-X

ASA/ISA TYPE	Catalog Number	Conductor Size AWG (Strands)	Number of Pairs	Insulation Thickness-mils	Inner Jacket Thickness-mils	C-L-X O.D. (in.)	Outer Jacket Thickness-mils	Approx. O.D.-In.	Approx. Net Wt. (lbs/M')
KX	584-20-3401	16(1X)	1	15	35	.43	50	0.54	128

ASA/ISA COLOR CODE								
ASA/ISA TYPE	EX		JX		KX		TX	
	Alloy	Color	Alloy	Color	Alloy	Color	Alloy	Color
Positive Wire	Chromel	Purple	Iron	White	Chrome	Yellow	Copper	Blue
Negative Wire	Constantan	Red	Constantan	Red	Alumel	Red	Constantan	Red
Outer Jacket Color	Purple		Black		Yellow		Blue	

# INSTRUMENTATION CABLES



Specifications: ASTM B-8, UL 13 & UL 2250,  
ICEA S-73-532

## C-L-X OKOSEAL TYPE P-OS/SP-OS Type ITC/PLTC Cable/300V Rated 105°C For CT Use, Sun Res

**Construction:** Instrumentation Type P-OS and SP-OS cable, with continuously welded and corrugated aluminum C-L-X sheath, with Okoseal jacket. Black/white and numbered color code.

**Sizes:** #16 & #18 AWG

**Application:** For use on PLTC or ITC circuits where protection against physical damage or lightning is required; indoors or outdoors, as open runs of cable, in cable tray, in raceways, direct burial, supported by a messenger wire, suitable for Class I, Division 2 or Class II, Division 2 or Class III, Division 2 hazardous locations. Also for use on power limited fire protective signaling cable (FPL) per NEC Code 760. Meets UL 13, IEEE 383 and IEEE 1202 vertical tray flame tests. Also, passes 210,000 BTU vertical tray flame test per ICEA T-29-520. American Bureau of Shipping listed as CWCMC Type PLTC and CWCMC Type ITC. Conforms to applicable requirements of IEC 60092-351 (1000V) and 350 and IEEE 1580.

### Single Pair and Triad Cables P-OS

Catalog Number	Conductor Size AWG (Strands)	Number of Pairs	Number of Triads	Insulation Thickness-mils	Inner Jacket Thickness-mils	C-L-X O.D. (In.)	Outer Jacket Thickness-mils	Approx. O.D.-In.	Approx. Net Wt. (lbs/M')
564-10-3401	16(7X)	1		15	35	.43	50	.54	134
564-15-3401	16(7X)		1	15	35	.43	50	.54	155

### Multi-Pair and Triad Cables SP-OS

Catalog Number	Conductor Size AWG (Strands)	Number of Pairs	Number of Triads	Insulation Thickness-mils	Inner Jacket Thickness-mils	C-L-X O.D. (In.)	Outer Jacket Thickness-mils	Approx. O.D.-In.s	Approx. Net Wt. (lbs/M')
561-10-3302	18(7X)	2		15	40	.58	50	.69	212
561-10-3304	18(7X)	4		15	50	.71	50	.82	273
561-10-3308	18(7X)	8		15	50	.80	50	.91	338
561-10-3312	18(7X)	12		15	60	.93	50	1.04	529
561-10-3324	18(7X)	24		15	70	1.24	50	1.35	889
561-10-3402	16(7X)	2		15	50	.67	50	.78	255
561-10-3404	16(7X)	4		15	50	.71	50	.82	327
561-10-3408	16(7X)	8		15	60	.93	50	1.04	505
561-10-3412	16(7X)	12		15	60	1.06	50	1.17	671
561-10-3424	16(7X)	24		15	70	1.37	50	1.48	1245
561-15-3404	16(7X)		4	15	50	.80	50	.91	384
561-15-3408	16(7X)		8	15	60	1.02	50	1.13	609
561-15-3412	16(7X)		12	15	70	1.19	50	1.30	862

# INSTRUMENTATION CABLES



## C-L-X OKOSEAL-N TYPE P-OS/SP-OS Type MC-HL Cable/600V Rated 90°C dry, 75°C wet For CT Use, Sun Res



**Construction:** Stranded copper conductors, Okoseal insulation with nylon covering on primaries, color coded, twisted into pair or triad, or groups of pairs or triads, numeric print group identification, aluminum/polyester shield and coated stranded copper drain wire over each group with 100% isolation between group shields, multiple groups assembled, aluminum/polyester shield and coated stranded copper drain wire overall, rip cord, Okoseal inner jacket with continuously welded and corrugated C-L-X sheath, with Okoseal jacket.

Pairs: Black/white and numbered color code. Triads: Black/white/red and numbered color code.

**Sizes:** #16 AWG

**Application:** For use on Class 1 Remote-Control and Signaling circuits; where a 600V rated cable is desired; for control, signal, and communication circuits; indoors or outdoors, in cable trays, in raceways, direct burial, supported by a messenger in outdoor locations. Suitable for Class I, Division 2 or Class II, Division 2 as well as Class I, Class II, and Class III, Division 1 and division 2 hazardous locations. Also for use as non power limited fire protective signaling cable (NPLF) per NEC Code 760. Listed by the American Bureau of Shipping (ABS) as CWC-MC-HL. IEC certified to 60092-350 (1000V). Meets IEEE 383 and IEEE 1202 vertical tray flame tests. Also, passes 210,000 BTU vertical tray flame test per ICEA T-29-520.

### Single Pair and Triad Cables P-OS

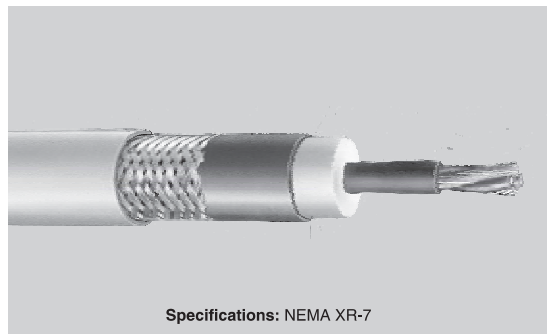
Catalog Number	Conductor Size AWG (Strands)	Number of Pairs	Number of Triads	Insulation Thickness-mils	Inner Jacket Thickness-mils	C-L-X O.D. (In.)	Outer Jacket Thickness-mils	Approx. O.D.-In.	Approx. Net Wt. (lbs/M')
564-60-3401	16(7X)	1		15/4	66	.53	50	.64	182
564-65-3401	16(7X)		1	15/4	58	.53	50	.64	190

### Multi-Pair and Triad Cables SP-OS

Catalog Number	Conductor Size AWG (Strands)	Number of Pairs	Number of Triads	Insulation Thickness-mils	Inner Jacket Thickness-mils	C-L-X O.D. (In.)	Outer Jacket Thickness-mils	Approx. O.D.-In.	Approx. Net Wt. (lbs/M')
561-60-3402	16(7X)	2		15/4	50	.67	50	.78	234
561-60-3404	16(7X)	4		15/4	50	.80	50	.91	335
561-60-3408	16(7X)	8		15/4	50	.93	50	1.04	492
561-60-3412	16(7X)	12		15/4	50	1.11	50	1.22	674
561-60-3424	16(7X)	24		15/4	50	1.42	50	1.53	1118
561-60-3436	16(7X)	36		15/4	60	1.64	60	1.82	1586
561-65-3404	16(7X)		4	15/4	50	.84	50	.95	395
561-65-3408	16(7X)		8	15/4	50	1.06	50	1.17	637
561-65-3412	16(7X)		12	15/4	50	1.24	50	1.35	863



# SPECIAL PURPOSE CABLES

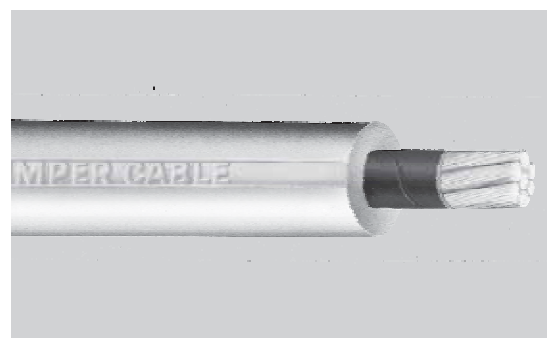


## \*X-RAY CABLE 65-250 kV D C

**Construction:** Two constructions are standard - one having three conductors and the other four conductors. The conductors are coated stranded copper, over which is an extruded semiconducting layer followed by Okonite insulation, extruded insulation shield, coated copper braid and an Okoseal jacket.

**Sizes:** 3 conductors and 4 conductors

**Application:** To supply the anode and cathode voltages to the X-Ray tube. Also used in other high voltage, low current applications.



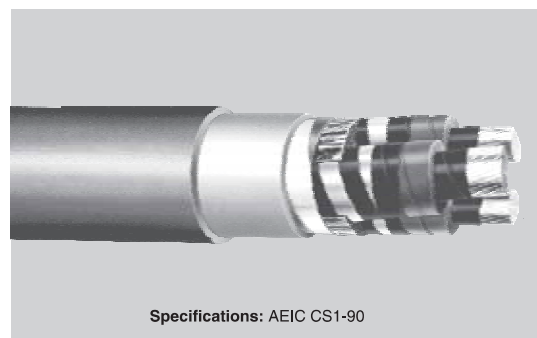
## OKOGUARD AERIAL JUMPER CABLE 15kV

**Conductor Temperature:** 90°C

**Sizes:** #2 AWG - #4/0 AWG

**Application:** For use as temporary power leads or "by-pass" jumpers for open aerial lines or aerial disconnects and switches in electric utility applications.

Catalog Number	Conductor Size AWG	Number of Strands	Approx. O.D.-In.
303-21-1934	2	259	0.782
303-21-1938	1/0	259	0.863
303-21-1940	2/0	259	0.913
303-21-1944	4/0	437	1.055



## SOLID TYPE PILC

### 15kV Paper Insulated Lead Covered Power Cable

**Construction:** 3 compact sector copper conductors, polybutene impregnated paper insulation, copper bearing lead sheath, and Okolene® jacket

**Conductor Temperature:** 90°C

**Sizes:** 350 - 500 kcmil

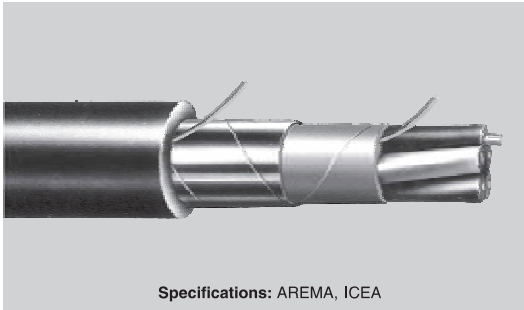
**Application:** For use in underground ducts, direct buried, and aerially when lashed to a messenger. Okonite PILC cable are manufactured in accordance with and meet the requirements of AEIC CS1-90 11th Edition.

Catalog Number	Conductor Size kcmil	Insulation Thickness mils	Lead Thickness mils	Jacket Thickness mils	Approx. O.D. - Inches	Weight lbs./ft.
101-63-4544	350	165	100	90	2.37	8.14
101-63-4665	500	165	105	110	2.64	10.31

\*Call your Okonite Representative for ordering information from stock.

# RAILROAD AND TRANSIT SYSTEM CABLES

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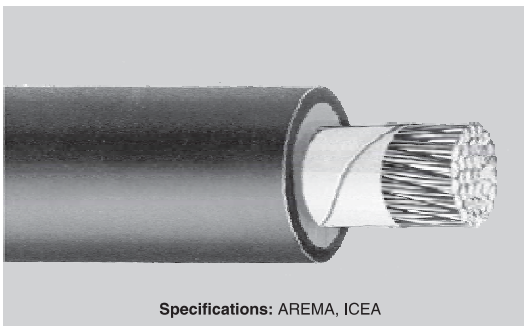
## \*OKONITE ARMORED UNDERGROUND RAILROAD SIGNAL CABLE

**Construction:** Multiple solid bare copper conductors, Okonite AAR Class "A" insulation, taped cushion layer, copper alloy armor and Okolene jacket overall with rip cord feature.

**Conductor Temperature:** 90°C

**Sizes:** 2 to 37 conductors #14 AWG - #4 AWG

**Application:** For direct burial or underground duct signal circuits where rodent and termite protection is required. Can also be used for squirrel resistant aerial applications.



## \*TYPE DEL-DIESEL ELECTRIC LOCOMOTIVE AND CAR WIRE 300V, 600V and 2000V

**Construction:** Coated flexible stranded copper conductor, separator tape, Okonite insulation, Okolon TS-CPE jacket.

**Conductor Temperature:** 90°C Continuous - 110°C Hot Spot

**Sizes:** #16 AWG - 535 kcmil

**Application:** For heavy duty use in locomotives and car equipment, wet or dry locations.



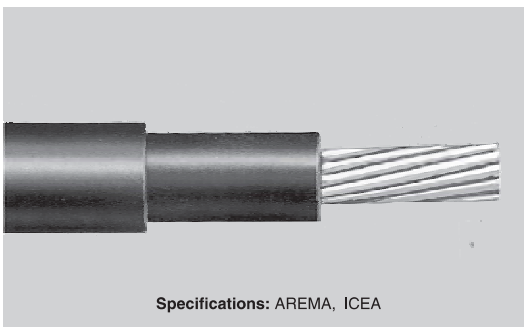
## \*OKONITE-OKOLENE TRACK WIRE 600V

**Construction:** Solid or stranded bare copper conductor, Okonite insulation, Okolene jacket.

**Conductor Temperature:** 90°C

**Sizes:** Solid conductor: #9 AWG, #6 AWG

**Application:** For use in track circuits, signal operations, car retarder and switch machine applications. Can be installed in wet or dry locations, in conduit, trays or troughs, or direct burial.



## \*OKONITE-OKOLON TS-CPE CASE WIRE 600V

**Construction:** Coated stranded copper conductor, Okonite EPR insulation, Okolon TS-CPE jacket.

**Conductor Temperature:** 90°C

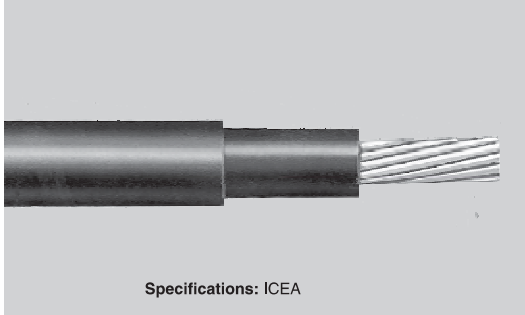
**Sizes:** #16 AWG, #10 AWG

**Application:** For use as relay and associated signal apparatus wiring and for connector wire.

\*Call your Okonite Representative for ordering information from stock.

# RAILROAD AND TRANSIT SYSTEM CABLES

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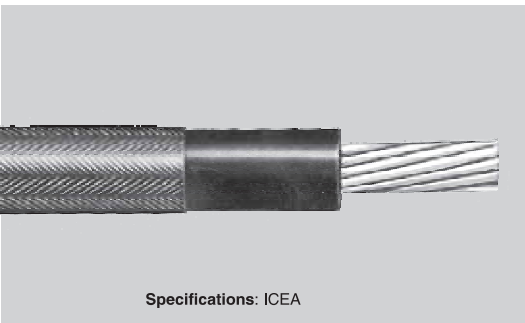
## \*OKONITE TOWER & CASE WIRE 600V

**Construction:** Coated stranded copper conductor, Okonite insulation, Okoseal jacket in any color.

**Conductor Temperature:** 90°C

**Sizes:** #16 AWG - #9 AWG

**Application:** For use as relay and associated signal apparatus wiring and for connector wire.



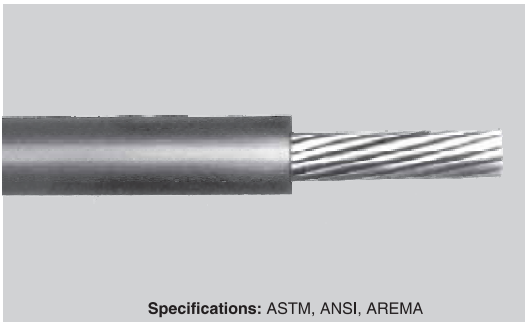
## \*OKONITE-NYLON BRAID CASE WIRE 600V

**Construction:** Coated stranded copper conductor, Okonite insulation, nylon braid with lacquer finish overall.

**Conductor Temperature:** 90°C

**Sizes:** #16 AWG - #9 AWG

**Application:** For use as relay and associated signal apparatus wiring and for connector wire.



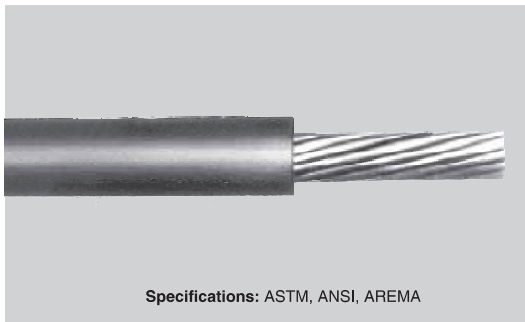
## \*OKOLON TS-CPE LINE WIRE

**Construction:** Solid or stranded bare copper or copperweld conductor; Okolon TS-CPE jacket.

**Conductor Temperature:** 90°C

**Sizes:** Solid Conductor: #12 AWG - #4 AWG  
Stranded Conductor: #6 AWG - #4 AWG  
Copperweld: #12 AWG - #4 AWG

**Application:** For use on overhead signal and power circuits installed on insulators.



## \*OKOLENE LINE WIRE

**Construction:** Solid or stranded bare copper or copperweld conductor, Okolene jacket.

**Conductor Temperature:** 90°C

**Sizes:** Solid Conductor: #12 AWG - #4 AWG  
Stranded Conductor: #6 AWG - #4 AWG  
Copperweld: #12 AWG - #4 AWG

**Application:** For use on overhead signal and power circuits installed on insulators.

\*Call your Okonite Representative for ordering information from stock.

# SPLICING AND TERMINATING PRODUCTS



## C-L-X TERMINATING TOOL KIT

**Application:** The C-L-X Terminating Tool Kit contains all the tools required to remove the overall jacket and aluminum sheath from the C-L-X power, control, and instrumentation cables. The Cable Slitting Saw may also be used on interlocked armor and lead sheathed cables. It is available in either an electric or a pneumatic model. The electric model is available with either a 120V ac or 220V ac, 2500rpm double insulated motor. The lightweight pneumatic motor is powered by a 2200rpm motor which requires 90 psi of air pressure for maximum efficiency. The Small Cable Guide keeps the saw centered on the cable when slitting cables of 1" diameter or less.

**Contents:** 1-Cable Slitting Saw, 1-Small Cable Guide, 12-2" dia. High Speed Steel Saw Blades, 1-Tubing Cutter, 1-Channel Lock Pliers, 1-10' Retractable Tape, 1-5/16" x 11" Screwdriver, 1-Cable Knife, 4" blade, 1-Cutter Blade Holder, 3-10" Hacksaw Blades, 1-Tool Case, 1-Padlock with 2 keys.

Catalog Number	Description	Net Weight (lbs.)	Shipping Weight (lbs.)
<b>C-L-X Terminating Tool Kit</b>			
▲ 606-01-1026	Electric - 120 Volt ac	15 1/2	18
▲ 606-01-1526	Pneumatic - 90 psi	15 1/2	17
<b>Cable Slitting Saw, Small Cable Guide and 12 High Speed Steel Saw Blades</b>			
▲ 606-01-0026	Electric - 120 Volt ac	13 1/2	8
▲ 606-01-0526	Pneumatic - 90 psi	13 1/2	7
<b>12 High Speed Steel Saw Blades</b>			
▲ 606-01-5754	2" diameter, 7 teeth per inch, packaged in a round tin container	1/2	1/2

▲ Authorized Stock Item



# SPLICING AND TERMINATING PRODUCTS

## Removing the C-L-X Armor

This procedure applies to all types of C-L-X armor - aluminum, copper, bronze and stainless steel. Safe working practices are to be observed, e.g., safety glasses and work gloves. Practice sessions are recommended to familiarize all concerned with the procedures and equipment.

1. Remove the jacket to expose the desired length of un-armored cable within the enclosure.

2. Refer to the C-L-X fitting instructions for the length of C-L-X armor to be exposed beyond the end of the jacket and mark the C-L-X armor at the top of the crown nearest to that point.

- For C-L-X Diameters 1 5/8" and Smaller, Go To Steps 10. Through 12.
- For C-L-X Diameters greater than 1 5/8" Follow Steps 3. Through 9.

3. First the C-L-X armor will be circumferentially cut using a hacksaw blade, (note the C-L-X saw tool kit is supplied with a hacksaw blade and blade holder) cut through the crown (high point) of the C-L-X at an angle so as to connect (or bridge) the valleys (low points) on both sides of the crown.

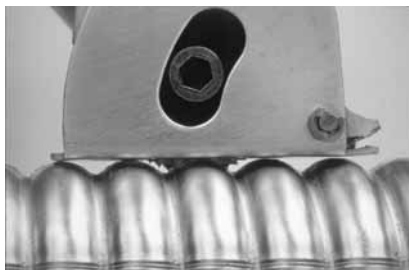
4. Again using a hacksaw blade, make a circumferential score in the valleys adjacent to the cut crown connecting both sides of the crown cut to the valleys. Do not cut through armor in valleys.

5. Holding the score area rigid, flex the cable by moving the free end so as to break the score around the circumference of the cable.

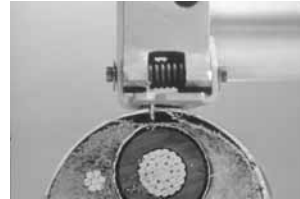
6. Next the C-L-X will be longitudinally cut by performing the following:

**Note on the C-L-X Saw** - The longitudinal cut is made with the C-L-X saw, which has an adjustable positive depth stop that can be set so the saw blade cuts through the crowns and partially cuts through the valleys. A proper saw depth is achieved when 80 to 95 % of the metal in the valley is removed. Use an extra piece of the cable being terminated to adjust the blade depth and practice.

Set blade to remove 80 to 95% of the metal thickness in the valley.



7. With cable secured, start at the free end of the cable and advance the Kett saw, making sure to use slight downward pressure to maintain the depth of cut along the cable, to the ring cut. When advancing the saw, be sure to maintain a straight line by cutting along the high point of the cable; this affects the cut depth also. See following:



Correct



Incorrect

If it is necessary to stop cutting or if a portion of the cut is to be repeated, use caution when reinserting the blade as kickback may occur.

8. At the completion of the longitudinal cut, starting at the free end, insert a wide blade screwdriver into the cut and twist. Repeat until the ring cut is reached. This will cause the remaining metal in the valleys to break open and the armor to loosen on the cable. Do not drive the screwdriver into the cut with excessive force as this may damage the underlying conductors.

9. Slide the armor off the cable. In the event that the armor is tight around the cable, pliers may be used to grab the armor at the split and pull it away from the cable. For large diameter cables, where long lengths of armor are to be removed, two cuts spaced 180° apart are recommended so that the armor may be removed in two pieces.

- For C-L-X Diameters 1 5/8" and Smaller Follow Steps 10. Through 13.

10. Using a hacksaw blade or tubing cutter, circumferentially score the C-L-X armor. Grip the cable in both hands with the score centered between hands, and flex the cable at the score line until it opens. Slide the sheath off the cable.

11. For C-L-X cables with an inner jacket or cable constructions where the C-L-X armor is tight fitting around the insulated conductors, the C-L-X saw should be used with the optional red colored cable guide. This guide assists in centering the saw on small diameter cable. The procedures and precautions of steps 3 to 9 apply here also.

12. Remove the cable fillers and marker tape and install the C-L-X fitting as per the manufacturer's instructions. The cable is now ready to be terminated into the enclosure.

# CONDUCTOR COLOR CODING SEQUENCE

ICEA S-73-532 TABLE E-2  
Color Sequence (No Green or White Conductors)

Conductor Number	Base Color	Tracer Color
1	Black	—
2	Red	—
3	Blue	—
4	Orange	—
5	Yellow	—
6	Brown	—
7	Red	Black
8	Blue	Black
9	Orange	Black
10	Yellow	Black
11	Brown	Black
12	Black	Red
13	Blue	Red
14	Orange	Red
15	Yellow	Red
16	Brown	Red
17	Black	Blue
18	Red	Blue
19	Orange	Blue
20	Yellow	Blue
21	Brown	Blue
22	Black	Orange
23	Red	Orange
24	Blue	Orange
25	Yellow	Orange
26	Brown	Orange
27	Black	Yellow
28	Red	Yellow
29	Blue	Yellow
30	Orange	Yellow
31	Brown	Yellow
32	Black	Brown
33	Red	Brown
34	Blue	Brown
35	Orange	Brown
36	Yellow	Brown
37	Black	

Color Coding per ICEA  
Method 1, E-2  
Sizes 8 AWG and larger:  
Surface Printing of Numbers per  
ICEA Method 4

**Special Order:** Any or all of the following conductors may be added when specifically requested by the customer to meet his specific application requirements. These conductor codings comply with UL and NEC requirements

Purpose	Base Color	Tracer Color
Equipment Grounding	Uninsulated Green Green	1 or more continuous yellow stripes
Grounded	White White White White White White White	Black continuous stripe Red continuous stripe Blue continuous stripe Orange continuous stripe Brown continuous stripe Numeric Printing

# CONDUCTOR COLOR CODING SEQUENCE

ICEA S-73-532 TABLE E-1  
Color Sequence (INCLUDES GREEN AND WHITE CONDUCTORS)

Conductor Number	Base Color	Tracer Color
1	Black	—
2	White	—
3	Red	—
4	Green	—
5	Orange	—
6	Blue	—
7	White	Black
8	Red	Black
9	Green	Black
10	Orange	Black
11	Blue	Black
12	Black	White
13	Red	White
14	Green	White
15	Blue	White
16	Black	Red
17	White	Red
18	Orange	Red
19	Blue	Red
20	Red	Green
21	Orange	Green

## CONDUCTOR IDENTIFICATION INFORMATION

**E-1** Color sequences for utility conductor identification, see Appendix E, Table E-1, ICEA Standard S-73-532, includes green and white.

**E-2** Color sequence for industrial conductor identification, see Appendix E, Table E-2, ICEA Standard S-73-532, excludes green and white.

**METHOD-1** Conductor identification, colored compounds with tracers in accordance with the ICEA standard.

**METHOD-2** Conductor identification, neutral compounds with tracers in accordance with the ICEA Standard.

**METHOD-3** Conductor identification, neutral or single colored compounds with surface printing of numbers and color designations in accordance with the ICEA Standard.

**METHOD-4** Conductor identification, neutral or single colored compounds with surface printing of numbers in accordance with the ICEA Standard.

**METHOD-5** Conductor identification, individual color coding with braids in accordance with the ICEA Standard.

# MISCELLANEOUS INFORMATION

## Decimal equivalents of one inch

Table 9-2

8ths	16ths	32nds	64ths	Decimal
—	—	—	1	.015625
—	—	1	2	.03125
—	—	—	3	.046875
—	1	2	4	.0625
—	—	—	5	.078125
—	—	3	6	.09375
—	—	—	7	.109375
1	2	4	8	.125
—	—	—	9	.140625
—	—	5	10	.15625
—	—	—	11	.171875
—	3	6	12	.1875
—	—	—	13	.203125
—	—	7	14	.21875
—	—	—	15	.234375
2	4	8	16	.25
—	—	—	17	.265625
—	—	9	18	.28125
—	—	—	19	.296875
—	5	10	20	.3125

## Useful Identities, Equations and Conversion Factors

- 1 mil = 0.001"
- 1 circular mil = (1 mil)<sup>2</sup>
- Area of a circle =  $\pi r^2$  or  $\pi D^2/4$
- where,
- $\pi = 3.1416$
- r = radius
- D = diameter
- 1 mm = 39.4 mils
- 1 mile = 5280 ft
- 1 km = 0.6214 miles
- 1 km = 3281 ft
- 1 mile = 1.609 km
- 1 inch = 25.4 mm
- 1 meter = 3.281 ft
- 1 meter = 39.37 inches
- 1 ton (US) = 2000 lbs

To Convert	Multiply by	To Obtain
mils	0.0254	millimeters
circular mils	$5.07 \times 10^{-4}$	square millimeters
inches	$1.0 \times 10^3$	mils
inches	25.4	millimeters
feet	$3.048 \times 10^{-4}$	kilometers
miles	1.609	kilometers
kilometers	0.6214	miles
kilometers	$3.281 \times 10^3$	feet
pounds	0.4536	kilograms
pounds	4.448	Newtons (joules/meter)
pounds/ft	1.488	kilograms/meter
tons (US)	0.9078	tons (metric)
psi	0.00689	megapascals (Mpa)
volts/mil	0.03937	kV/mm
ohms/1000 ft	3.28	ohms/km
gigaohms - 1000 ft	305	gigaohms-meter

## Temperature conversion table

Table 9-3

TO CONVERT DEGREES		
To C	F or C	To F
-65.	-85	-121
-62.22	-80	-112
-59.45	-75	-103
-56.67	-70	-94
-53.89	-65	-85
-51.11	-60	-76
-48.34	-55	-67
-45.56	-50	-58
-42.78	-45	-49
-40.	-40	-40
-37.22	-35	-31
-34.44	-30	-22
-31.67	-25	-13
-28.89	-20	-4
-26.11	-15	5
-23.33	-10	14
-20.56	-5	23
-17.78	0	32
-15.	5	41
-12.22	10	50
-9.44	15	59
-6.67	20	68
-3.89	25	77
-1.11	30	86
1.67	35	95
4.44	40	104
7.22	45	113
10.	50	122
12.78	55	131
15.56	60	140
18.33	65	149
21.11	70	158
23.89	75	167
26.67	80	176
29.44	85	185
32.22	90	194
35.	95	203
37.78	100	212
40.56	105	221
43.33	110	230
46.11	115	239
48.89	120	248
51.67	125	257
54.44	130	266
57.22	135	275
60.	140	284
62.78	145	293
65.56	150	302
68.33	155	311
71.11	160	320
73.89	165	329
76.67	170	338
79.44	175	347
82.22	180	356
85.	185	365
87.78	190	374
90.56	195	383
93.33	200	392
96.11	205	401
98.89	210	410
101.67	215	419
104.44	220	428
107.22	225	437
110.	230	446
112.78	235	455
115.56	240	464
118.33	245	473
121.11	250	482
123.89	255	491
126.67	260	500
129.44	265	509
132.22	270	518
135.	275	527