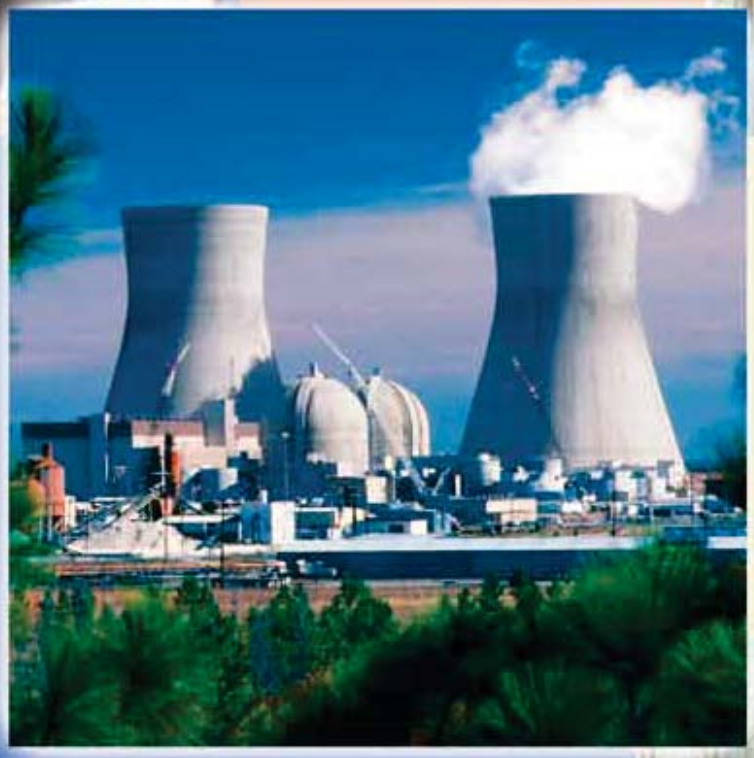
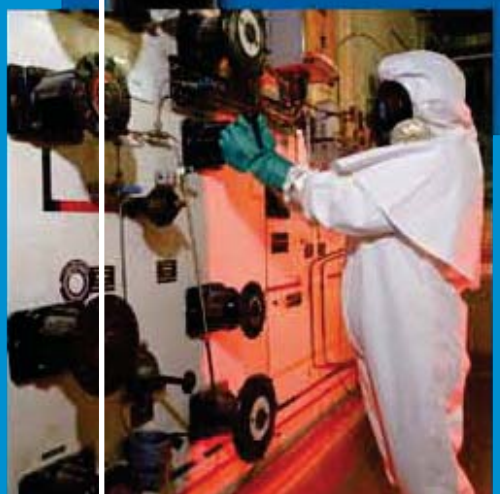
General Cable

NUCLEAR

Brand Rex BRAND ULTROL®



ULTROL® CLASS 1E & NON-SAFETY CABLES

FEBRUARY 2011

Join the Wire Wizard for a quick, informative tour showing the interactive features of our catalogs

General Cable Wire Wizard℠

WELCOME

On-Line Catalog Features

- View the catalog in full screen mode by using the far left expansion logo on the menu bar. (Keyboard input may not work in full screen mode, which means you must leave the full screen mode in order to utilize the email function.)
- Click the "General Cable" logo on the left side of the menu bar to go to General Cable's Web site.
- The "Table of Contents" button in the center of the menu bar takes you to a fully interactive page. Click on any product category or listing to take you to the appropriate page. (All other page references throughout the catalog are also fully interactive.)
- The entire catalog's contents can be searched using the Search button located in the upper right of the menu bar.
- Turn catalog pages by clicking your mouse on the top or bottom corner of the page or by using the forward or back arrows on the side of the page or on the bottom bar.
- Zoom to details on each page by clicking when the magnifying glass pointer is active. Click again to return to full view.
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ULTROL®

Nuclear power plants require higher-quality cables that meet stringent Nuclear Regulatory Commission Standards. For more than three decades, General Cable has answered the needs of the nuclear power market with cables for power generation, transmission and distribution worldwide. All General Cable's products meet strict quality-assurance standards to provide nuclear power plants with the maximum level of performance, reliability and safety.

Ultrol® Comprehensive Product Line

General Cable's Brand Rex Brand Ultrol insulated cables include a full line of products recommended for all types of generating plants. From its inception, the Ultrol product line has grown from control cables to a comprehensive line of generating station cables, all of which are qualified for 40-year service life capability. From power distribution and control circuits to monitoring equipment, security systems and plant operation, Ultrol meets every application need of the nuclear power market.

- Power and Control Cable
- Instrumentation and Thermocouple Cable
- Communications Cable
- Switchboard Wire
- Coaxial and Triaxial Cable

The Ultimate in Class 1E

General Cable's Ultrol Class 1E product line reliability has been validated to perform its intended safety-related function during Design Basis Events (DBE) by being environmentally qualified through simulated Steam Line Break (SLB) and Loss-of-Coolant Accident (LOCA) environments. Compliance Standards and Franklin Qualification Reports for the Ultrol product line are as follows:

Compliance Standards

- ANSI
- ICEA
- IEEE

Franklin Qualification Reports

- F-C5120-1
- F-C5120-2
- F-C5120-3
- F-C5120-4

Backed by Quality Assurance

Every Ultrol cable is manufactured in conformance with the documented General Cable Quality Assurance program for Nuclear Facilities and Quality Control procedures, all under our ISO 9001:2008, ASME NQA-1:1994 and ASME NQA-1:2008 (and 2009 Supplemental) commitment-to-quality organization. General Cable's facility has maintained its nuclear status through regular audits by industry committees such as the Nuclear Procurement Issues Committee and several other quality assurance organizations.

- International Standards Organization – ISO 9001:2008
- American National Standards Institute – ANSI N45.2
- American Society of Mechanical Engineers – ASME NQA-1:1994 and ASME NQA-1:2008 (and 2009 Supplemental)
- Nuclear Regulatory Commission – NRC 10 CFR 50 Appendix B
- Nuclear Procurement Issues Committee (NUPIC)
- Nuclear Industry Assessment Committee (NIAC)

Reliability & Safety Ahead of Its Time

Ultrol is considered a leading name in the nuclear power generating industry due to it demonstrated reliability and safety. As a proprietary formulation, Ultrol has a balance of properties such as maximum flame retardancy, long-term moisture stability, long-term thermal endurance and superior electricals that successfully sustain long-term qualification testing. The Ultrol radiation- and moisture-resistant line of wire and cable is ideal for safety and non-safety related nuclear facilities, including both indoor and outdoor applications in wet or dry conditions. General Cable's manufacturing capabilities, experience and high-quality standards provide the platform for Ultrol's reliability and safety, ahead of its time in the nuclear industry.

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ULTROL® Nuclear Cables Catalog

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Brand Rex BRAND

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ULTROL®… Still ahead of its time after 35 years
Class 1E nuclear rated cables

For more than three decades, General Cable has answered the needs of the nuclear power market with our Brand Rex Brand Ultrol® insulated cables. Ultrol, a leading name in the nuclear power generating industry, is a flame-retardant, radiation- and moisture-resistant line of wire and cable qualified for a 40-year service life. Recommended for power plant generation, original equipment manufacturers (OEMs), and storage and waste management facilities worldwide – these cables are suitable for indoor and outdoor installations, and in wet or dry locations. General Cable's broad manufacturing capability, proven experience and high quality standards provide the platform for leadership in this industry.

Our exclusive Ultrol system provides proven reliability in a full line of cables recognized for use in Class 1E nuclear rated environments — from 600 V single conductor switchboard and power cables to multi-conductor instrumentation, control, power and coaxial/triaxial cables.

Ultrol® Class 1E Nuclear Single Conductor Switchboard and Power Cable

Ultrol® SIS, Switchboard Wire, Class 1E Nuclear, 600V, 90ºC, VW-1, Class B, K & H, UL Type SIS and Type SIS/XHHW-2 — SPECS 100 & 125

- **Conductor**: 18 AWG thru 1000 kcmil tinned, annealed copper, Class B, Flexible Class K or Class H
- **Insulation**: Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol Cross-Linked Polyethylene (FR-XLPE) - Gray
- **Options**: Conductor stranding • Bare copper • Full-colored insulation • UL Listed SIS/XHHW-2 for sizes 14 AWG thru 4/0 AWG and XHHW-2 for kcmil sizes
- **Industry & Quality Assurance Compliances**: ICEA S-95-658 • ICEA T-29-520 • IEEE 323-1974 • IEEE 383-1974 • VW-1 • NRC 10CFR50 • ASME NQA-1 • ANSI N45.2 • NIAC • NUPIC • UL 44 SIS/XHHW-2

Ultrol® Heavy Wall, Single Conductor, Power Cable, Class 1E Nuclear, 600V, 90ºC, VW-1, UL Type RHH/RHW-2 — SPEC 150

- **Conductor**: 14 AWG thru 1000 kcmil tinned, annealed copper, Class B stranding
- **Insulation**: Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol Cross-Linked Polyethylene (FR-XLPE) - Black
- **Options**: Conductor stranding • Full-colored insulation • UL Listed RHH/RHW-2 for sizes 14 AWG thru 1000 kcmil • CT USE and SUNLIGHT RESISTANT for 1/0 AWG and larger
- **Industry & Quality Assurance Compliances**: ICEA S-95-658 • ICEA T-29-520 • IEEE 323-1974 • IEEE 383-1974 • VW-1 • NRC 10CFR50 • ASME NQA-1 • ANSI N45.2 • NIAC • NUPIC • UL 44 RHH/RHW-2

Ultrol® Dual Wall, Single Conductor, Power Cable, Class 1E Nuclear, 600V, 90ºC, VW-1, UL Type RHH/RHW-2 — SPEC 175

- **Conductor:** 14 AWG thru 1000 kcmil tinned, annealed copper, Class B stranding
- **Insulation:** Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol Cross-Linked Polyethylene (FR-XLPE) - Black
- **Jacket:** Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black
- **Options:** Conductor stranding • Full-colored insulation • UL Listed RHH or RHW-2 or USE for sizes 14 AWG thru 1000 kcmil • CT USE and SUNLIGHT RESISTANT for 1/0 AWG and larger
- **Industry & Quality Assurance Compliances**: ICEA S-95-658 • ICEA T-29-520 • IEEE 323-1974 • IEEE 383-1974 • VW-1 • NRC 10CFR50 • ASME NQA-1 • ANSI N45.2 • NIAC • NUPIC • UL 44 RHH/RHW-2

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ULTROL®… Still ahead of its time after 35 years
Class 1E nuclear rated cables

Ultrol® Class 1E Nuclear Instrumentation Cable

Ultrol® Instrumentation Cable, Multi-Conductor, Class 1E Nuclear, 600V, 90ºC, VW-1 — SPEC 200

- **Conductor:** 18 AWG and 16 AWG tinned, annealed copper, Class B stranding
- **Insulation:** Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol Cross-Linked Polyethylene (FR-XLPE)
- **Identification:** Color coded per ICEA Method 1, Table E-1
- **Jacket:** Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black
- **Options:** Conductor stranding • 300 V & 1000 V • Overall galvanized steel or aluminum interlocked armor sheath
- **Industry & Quality Assurance Compliances:** ICEA S-73-532 • ICEA T-29-520 • IEEE 323-1974 • IEEE 383-1974 • IEEE 1202 • VW-1 • NRC 10CFR50 • ASME NQA-1 • ANSI N45.2 • NIAC • NUPIC

Ultrol® Instrumentation Cable, Multi-Conductor, Overall Shield, Class 1E Nuclear, 600V, 90ºC, VW-1 — SPEC 225

- **Conductor:** 18 AWG and 16 AWG tinned, annealed copper, Class B stranding
- **Insulation:** Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol Cross-Linked Polyethylene (FR-XLPE)
- **Identification:** Color coded per ICEA Method 1, Table E-1
- **Overall Shield:** Aluminum/polyester tape in contact with a stranded tinned copper drain wire
- **Jacket:** Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black
- **Options:** Conductor stranding • 300 V & 1000 V • Copper/mylar tape shield • Tinned copper braid shield • Overall galvanized steel or aluminum interlocked armor sheath
- **Industry & Quality Assurance Compliances:** ICEA S-73-532 • ICEA T-29-520 • IEEE 323-1974 • IEEE 383-1974 • IEEE 1202 • VW-1 • NRC 10CFR50 • ASME NQA-1 • ANSI N45.2 • NIAC • NUPIC

Ultrol® Instrumentation Cable, Individually Shielded Pairs or Triads, Overall Shield, Class 1E Nuclear, 600V, 90ºC, VW-1 — SPEC 250

- **Conductor:** 18 AWG and 16 AWG tinned, annealed copper, Class B stranding
- **Insulation:** Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol Cross-Linked Polyethylene (FR-XLPE)
- **Identification:** Color-coded per ICEA Method 1; Pairs – black and white, Triads – black, white and red. One conductor in each pair/triad is printed alpha-numerically for easy identification.
- **Individually Shielded:** Pairs or triads are 100% shielded with an aluminum/polyester tape in contact with a stranded tinned copper drain wire
- **Overall Shield:** Aluminum/polyester tape in contact with a stranded tinned copper drain wire
- **Jacket:** Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black
- **Options:** Conductor stranding • 300 V & 1000 V • Copper/mylar tape shield with drain wire • Tinned copper braid shield • Overall galvanized steel or aluminum interlocked armor sheath
- **Industry & Quality Assurance Compliances:** ICEA S-73-532 • ICEA T-29-520 • IEEE 323-1974 • IEEE 383-1974 • IEEE 1202 • VW-1 • NRC 10CFR50 • ASME NQA-1 • ANSI N45.2 • NIAC • NUPIC

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Class 1E nuclear rated cables

Ultrol® Class 1E Nuclear Multi-Conductor Control and Power Cable

Ultrol® Control Cable, Multi-Conductor, Class 1E Nuclear, 600V, 90ºC, VW-1, UL Type TC — SPEC 275

- **Conductor:** 14 AWG thru 10 AWG tinned, annealed copper, Class B stranding, 2 thru 37 conductors
- **Insulation:** Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol Cross-Linked Polyethylene (FR-XLPE)
- **Identification:** Color coded per ICEA Method 1, Table E-1
- **Jacket:** Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black
- **Options:** Conductor stranding • 1 kV & 2 kV • E-2 color code • Overall galvanized steel or aluminum interlocked armor sheath
- **Industry & Quality Assurance Compliances:** ICEA S-73-532 • ICEA T-29-520 • IEEE 323-1974 • IEEE 383-1974 • IEEE 1202 • VW-1 • NRC 10CFR50 • ASME NQA-1 • ANSI N45.2 • NIAC • NUPIC • UL 1277 Type TC • UL 44 XHHW-2

Ultrol® Control Cable, Multi-Conductor, Overall Shield, Class 1E Nuclear, 600V, 90ºC, VW-1, UL Type TC — SPEC 300

- **Conductor:** 14 AWG thru 10 AWG, tinned, annealed copper, Class B stranding - 2 thru 37 conductors
- **Insulation:** Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol Cross-Linked Polyethylene (FR-XLPE)
- **Identification:** Color coded per ICEA Method 1, Table E-1
- **Overall Shield:** Aluminum/polyester tape in contact with a stranded tinned copper drain wire
- **Jacket:** Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black
- **Options:** Conductor stranding • 1 kV & 2 kV • E-2 color code • Helical tinned copper tape shield • Longitudinal corrugated tinned copper tape shield • Overall galvanized steel or aluminum interlocked armor sheath
- **Industry & Quality Assurance Compliances:** ICEA S-73-532 • ICEA T-29-520 • IEEE 323-1974 • IEEE 383-1974 • IEEE 1202 • VW-1 • NRC 10CFR50 • ASME NQA-1 • ANSI N45.2 • NIAC • NUPIC • UL 1277 Type TC • UL 44 XHHW-2

Ultrol® Power Cable, 3 or 4 Conductors with Ground, Class 1E Nuclear, 600V, 90ºC, VW-1, UL Type TC — SPEC 325

- **Conductor:** 14 AWG thru 750 kcmil tinned, annealed copper, Class B stranding
- **Insulation:** Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol Cross-Linked Polyethylene (FR-XLPE)
- **Identification:** Color coded per ICEA Method 4; black with printed numbers
- **Grounding Conductor(s):** Annealed tinned copper, Class B stranding, sized according to NEC® requirements
- **Jacket:** Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black
- **Options:** Conductor stranding • 1 kV & 2 kV • Full-colored insulation • Helical tinned copper tape shield • Longitudinal corrugated tinned copper tape shield • Overall galvanized steel or aluminum interlocked armor sheath
- **Industry & Quality Assurance Compliances:** ICEA S-95-658 • ICEA T-29-520 • IEEE 323-1974 • IEEE 383-1974 • IEEE 1202 • VW-1 • NRC 10CFR50 • ASME NQA-1 • ANSI N45.2 • NIAC • NUPIC • UL 1277 Type TC • UL 44 XHHW-2

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Ultrol® Class 1E Nuclear Coaxial and Triaxial Cables

SPEC 350 CS50060 – 50 Ohm Coax RG-174/U Equivalent
SPEC 375 CS50116 – 50 Ohm Coax RG-58C/U Equivalent
SPEC 400 CS50285 – 50 Ohm Coax RG-213/U Equivalent
SPEC 425 CS75146 – 75 Ohm Coax RG-59B/U Equivalent
SPEC 450 CS75285 – 75 Ohm Coax RG-11A/U Equivalent
SPEC 475 TCD95285 – 89 Ohm Coax RG-22B/U Equivalent
SPEC 500 CS95146 – 95 Ohm Coax RG-62B/U Equivalent
SPEC 525 CD95146 – 95 Ohm Coax RG-71B/U Equivalent
SPEC 550 TS752855 – 75 Ohm Triax RG-11A/U Equivalent

Industry & Quality Assurance Compliances: ICEA S-73-532 • IEEE 323-1974 • IEEE 383-1974 • VW-1 • NRC 10CFR50 • ASME NQA-1 • ANSI N45.2 •.NIAC • NUPIC • MIL-C-17 EQUIVALENT

General Cable's Ultrol Class 1E product line reliability has been validated to perform its intended safety-related function during Design Basis Events (DBE) by being environmentally qualified through simulated Steam Line Break (SLB) and Loss-of-Coolant Accident (LOCA) environments. Compliance Standards and Franklin Qualification Reports for the Ultrol product line are as follows:

Compliance Standards	Franklin Qualification Reports
• ANSI • ICEA • IEEE	• F-C5120-1 – 300 V & 600 V Constructions • F-C5120-2 – Coaxial / Triaxial Constructions • F-C5120-3 – All Constructions, 150 Day Total Testing Period • F-C5120-4 – 300 V Constructions

Every Ultrol cable is manufactured in conformance with the documented General Cable Quality Assurance program for Nuclear Facilities and Quality Control procedures, all under our ISO 9001:2008, ASME NQA-1:1994 and ASME NQA-1:2008 (and 2009 Supplemental) commitment-to-quality organization. General Cable's facility has maintained its nuclear status through regular audits by industry committees such as the Nuclear Procurement Issues Committee and several other quality assurance organizations.

Quality Assurance	
• International Standards Organization – ISO 9001:2008 • American National Standards Institute – ANSI N45.2 • American Society of Mechanical Engineers – ASME NQA-1:1994 and ASME NQA-1:2008 (and 2009 Supplemental)	• Nuclear Regulatory Commission – NRC 10 CFR 50 Appendix B • Nuclear Procurement Issues Committee (NUPIC) • Nuclear Industry Assessment Committee (NIAC)

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ULTROL® Nuclear Cables Catalog

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Ultrol® SIS Switchboard Wire, Class 1E Nuclear

600 V, 90°C, VW-1, Class B, UL Type SIS and Type SIS/XHHW-2

Product Construction:

Conductor:
- 18 AWG thru 1000 kcmil tinned, annealed copper per ASTM B33; Class B stranding per ASTM B8

Insulation:
- Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol® Cross-Linked Polyethylene (FR-XLPE)
- Color code: Gray

Print:
- For 18 AWG & 16 AWG:
  GENERAL CABLE BRAND REX BRAND (WC) ULTROL FR-XLPE (UL) TYPE SIS 600V 90ºC VW-1 NUCLEAR YEAR OF MFG
- For 14 AWG thru 4/ 0 AWG:
  GENERAL CABLE BRAND REX BRAND (WC) ULTROL 1/C XXAWG COPPER FR-XLPE (UL) TYPE SIS/XHHW-2 600V 90ºC VW-1 NUCLEAR YEAR OF MFG
  Note: Sizes 1/0 AWG & larger include:
  TRACEABILITY NUMBER & SEQUENTIAL FOOTAGE MARK
- For 250 kcmil thru 1000 kcmil:
  GENERAL CABLE BRAND REX BRAND (WC) ULTROL 1/C XXXKCMIL COPPER FR-XLPE (UL) TYPE XHHW-2 600V 90ºC VW-1 NUCLEAR YEAR OF MFG TRACEABILITY NUMBER SEQUENTIAL FOOTAGE MARK

Options:
- Conductor stranding
- Bare copper
- Full-colored insulation
- UL Listed SIS/XHHW-2 for sizes 14 AWG thru 4/ 0 AWG
- UL Listed XHHW-2 for kcmil sizes

Applications:
- Ultrol SIS is a 600 V single conductor, insulated, Class 1E rated switchboard wire
- For use in Class 1E low voltage applications in operation and interconnection of protective devices where optimum performance is required

Features:
- Rated at 90ºC wet or dry
- Fully traceable
- Qualified for 40-year service life
- Radiation resistant (up to 200 megarads)
- Long-term thermal endurance and superior electricals
- Excellent mechanical cut through properties
- Long-term moisture and radiation stability
- Free stripping for ease of termination
- Meets cold bend test at -40°C

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-95-658 (formerly ICEA S-66-524 & S-19-81)
- UL 44 SIS/XHHW-2

Flame Test Compliances:
- IEEE 383 (70,000 BTU/hr)
- ICEA T-29-520 (210,000 BTU/hr)
- UL VW-1

Other:
- Quality assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- NIAC
- NUPIC

Packaging:
- Material to be shipped on non-returnable wooden reels

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® SIS Switchboard Wire, Class 1E Nuclear

600 V, 90°C, VW-1, Class B, UL Type SIS and Type SIS/XHHW-2

ULTROL® SIS SWITCHBOARD WIRE, CLASS 1E NUCLEAR, 600 V, 90°C, VW-1, CLASS B, UL TYPE SIS AND TYPE SIS/XHHW-2

Catalog Number	Cond. Size (AWG/ kcmil)	Cond. Strand	Min. Avg. Insulation Thickness		Nom. Cable Diameter		Copper Weight		Net Weight	
			Inches	mm	Inches	mm	lbs/ 1000 ft.	kg/ km	lbs/ 1000 ft.	kg/ km
326960.08	18	7/.0152	0.030	0.76	0.108	2.69	5	8	9	14
326970.08	16	7/.0192	0.030	0.76	0.118	2.95	8	12	13	19
326980.08	14	7/.0242	0.030	0.76	0.133	3.33	13	19	19	28
326990.08	12	7/.0305	0.030	0.76	0.152	3.81	20	30	27	41
327000.08	10	7/.0385	0.030	0.76	0.175	4.39	32	48	41	60
327010.08	8	7/.0486	0.045	1.14	0.236	5.92	51	76	68	100
327020.08	6	7/.0612	0.045	1.14	0.273	6.86	81	121	101	151
327030.08	4	7/.0772	0.045	1.14	0.320	8.05	129	192	154	229
327040.08	2	7/.0974	0.045	1.14	0.379	9.55	205	305	237	353
327050.08	1	19/.0664	0.055	1.40	0.437	11.0	258	384	298	444
327060.08	1/0	19/.0745	0.055	1.40	0.476	12.0	326	485	371	552
327070.08	2/0	19/.0837	0.055	1.40	0.521	13.2	411	612	462	687
327080.08	3/0	19/.0940	0.055	1.40	0.571	14.4	518	771	575	856
327090.08	4/0	19/.1055	0.055	1.40	0.627	15.9	653	972	717	1067
327100.08	250	37/.0822	0.065	1.65	0.695	17.6	772	1149	852	1268
327110.08	350	37/.0973	0.065	1.65	0.798	20.2	1081	1609	1176	1750
327120.08	500	37/.1162	0.065	1.65	0.927	23.4	1544	2297	1659	2468
379360.08	750	61/.1109	0.080	2.03	1.137	28.8	2316	3446	2480	3691
379370.08	1000	61/.1280	0.080	2.03	1.287	32.6	3088	4595	3279	4879

Dimensions and weights are subject to industry tolerance.

Ultrol® SIS Switchboard Wire, Class 1E Nuclear

600 V, 90°C, VW-1, Flexible Class K & H, UL Type SIS and Type SIS/XHHW-2

Product Construction:

Conductor:
- 18 AWG thru 10 AWG tinned, annealed copper per ASTM B33; Class K stranding per ASTM B174
- 8 AWG thru 1000 kcmil tinned, annealed copper per ASTM B33; Class H stranding per ASTM B173

Insulation:
- Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol® Cross-Linked Polyethylene (FR-XLPE)
- Color code: Gray

Print:
- For 18 AWG & 16 AWG:
  GENERAL CABLE BRAND REX BRAND (WC) ULTROL 1/C XXAWG COPPER FR-XLPE TYPE SIS 600V 90ºC VW-1 NUCLEAR YEAR OF MFG
- For 14 AWG thru 4/ 0 AWG:
  GENERAL CABLE BRAND REX BRAND (WC) ULTROL 1/C XXAWG COPPER FR-XLPE (UL) TYPE SIS/XHHW-2 600V 90ºC VW-1 NUCLEAR YEAR OF MFG
  Note: Sizes 1/ 0 AWG & larger include:
  TRACEABILITY NUMBER & SEQUENTIAL FOOTAGE MARK
- For 250 kcmil thru 1000 kcmil:
  GENERAL CABLE BRAND REX BRAND (WC) ULTROL 1/C XXXKCMIL COPPER FR-XLPE (UL) TYPE XHHW-2 600V 90ºC VW-1 NUCLEAR YEAR OF MFG TRACEABILITY NUMBER SEQUENTIAL FOOTAGE MARK

Options:
- Conductor stranding
- Bare copper
- Full-colored insulation
- UL Listed SIS/XHHW-2 for sizes 14 AWG thru 4/ 0 AWG
- UL Listed XHHW-2 for kcmil sizes

Applications:
- Ultrol SIS is a 600 V flexible single conductor, insulated, Class 1E rated switchboard wire
- For use in Class 1E low voltage applications in operation and interconnection of protective devices where optimum performance is required.

Features:
- Rated at 90ºC wet or dry
- Fully traceable
- Qualified for 40-year service life
- Radiation resistant (up to 200 megarads)
- Long-term thermal endurance and superior electricals
- Excellent mechanical cut through properties.
- Long-term moisture and radiation stability
- Free stripping for ease of termination
- Meets cold bend test at -40°C

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-95-658 (formerly ICEA S-66-524 & S-19-81)
- UL 44 SIS/XHHW-2

Flame Test Compliances:
- IEEE 383 (70,000 BTU/hr)
- ICEA T-29-520 (210,000 BTU/hr)
- UL VW-1

Other:
- Quality assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- NIAC
- NUPIC

Packaging:
- Material to be shipped on non-returnable wooden reels

Brand Rex BRAND

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Phone: (800) 237-6419
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Ultrol® SIS Switchboard Wire, Class 1E Nuclear

600 V, 90°C, VW-1, Flexible Class K & H, UL Type SIS and Type SIS/XHHW-2

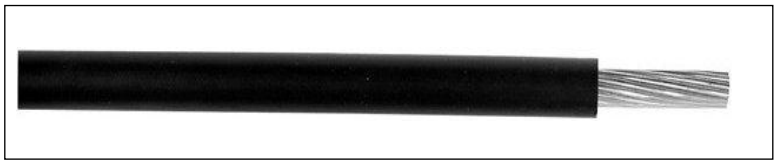
ULTROL® SIS SWITCHBOARD WIRE, CLASS 1E NUCLEAR, 600 V, 90°C, VW-1, FLEXIBLE CLASS K & H, UL TYPE SIS AND TYPE SIS/XHHW-2

Catalog Number	Cond. Size (AWG/ kcmil)	Cond. Strand	Min. Avg. Insulation Thickness		Nom. Cable Diameter		Copper Weight		Net Weight	
			Inches	mm	Inches	mm	lbs/ 1000 ft.	kg/ km	lbs/ 1000 ft.	kg/ km
327130.08	18	16/.010	0.030	0.76	0.108	2.69	5	7	9	14
327140.08	16	26/.010	0.030	0.76	0.119	2.97	8	12	13	19
327150.08	14	41/.010	0.030	0.76	0.133	3.33	13	19	18	27
327160.08	12	65/.010	0.030	0.76	0.150	3.76	20	30	27	40
327170.08	10	105/.010	0.030	0.76	0.174	4.37	33	50	41	61
327180.08	8	133/.0111	0.045	1.14	0.257	6.45	52	77	70	105
327190.08	6	133/.0140	0.045	1.14	0.299	7.52	82	122	105	156
327200.08	4	133/.0177	0.045	1.14	0.353	8.89	132	196	160	239
327210.08	2	133/.0223	0.045	1.14	0.420	10.6	208	310	244	363
327220.08	1	259/.0180	0.055	1.40	0.476	12.0	266	396	312	465
327230.08	1/0	259/.0202	0.055	1.40	0.520	13.1	344	512	386	574
327240.08	2/0	259/.0227	0.055	1.40	0.571	14.4	422	628	481	715
327250.08	3/0	259/.0255	0.055	1.40	0.628	15.9	533	793	600	892
327260.08	4/0	259/.0286	0.055	1.40	0.714	18.1	670	997	746	1110
379310.08	250	427/.0242	0.065	1.65	0.761	19.2	795	1183	888	1321
379320.08	350	427/.0286	0.065	1.65	0.874	22.1	1110	1652	1221	1817
379330.08	500	427/.0342	0.065	1.65	1.034	26.2	1590	2366	1728	2572
379340.08	750	703/.0327	0.080	2.03	1.286	32.6	2410	3586	2611	3886
379350.08	1000	703/.0377	0.080	2.03	1.458	36.9	3205	4769	3441	5120

Dimensions and weights are subject to industry tolerance.

Ultrol® Heavy Wall, Single Conductor, Power Cable, Class 1E Nuclear

600 V, 90°C, VW-1, UL Type RHH/RHW-2



Product Construction:

Conductor:
- 14 AWG thru 1000 kcmil tinned, annealed copper per ASTM B33; Class B stranding per ASTM B8

Insulation:
- Flame-retardant, heat-, moisture- and Radiation-resistant, thermoset Ultrol® Cross-Linked Polyethylene (FR-XLPE) - Black

Print:
- For 14 AWG thru 4/ 0 AWG:
  GENERAL CABLE BRAND REX
  BRAND (WC) ULTROL 1/C XXAWG
  COPPER FR-XLPE (UL) TYPE
  RHH/RHW-2 600V 90ºC VW-1
  NUCLEAR YEAR OF MFG
  Note: Sizes 1/0 AWG & larger include:
  TRACEABILITY NUMBER &
  SEQUENTIAL FOOTAGE MARK
- For 250 kcmil thru 1000 kcmil:
  GENERAL CABLE BRAND REX
  BRAND (WC) ULTROL 1/C XXXKCMIL
  COPPER FR-XLPE (UL) TYPE
  RHH/RHW-2 600V 90ºC VW-1
  NUCLEAR YEAR OF MFG
  TRACEABILITY NUMBER
  SEQUENTIAL FOOTAGE MARK

Options:
- Conductor stranding
- Full-colored insulation
- UL Listed RHH/RHW-2 for sizes 14 AWG thru 1000 kcmil
- CT USE and SUNLIGHT RESISTANT for 1/0 AWG and larger

Applications:
- Ultrol Power cable is a 600 V, insulated heavy wall, single conductor Class 1E rated wire for use in demanding applications without additional jacketing protection in nuclear generating stations and where flame retardancy is critical.
- For use in Class 1E low voltage power and lighting functions where optimum performance is required
- May be installed in trays, conduit, ducts, or direct buried.

Features:
- Rated at 90ºC wet or dry
- Fully traceable
- Qualified for 40-year service life
- Radiation resistant (up to 200 megarads)
- Long-term thermal endurance and superior electricals
- Excellent mechanical cut through properties.
- Long-term moisture and radiation stability
- Free stripping for ease of termination
- Meets cold bend test at -40°C

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-95-658 (formerly ICEA S-66-524 & S-19-81)
- UL 44 RHH/RHW-2

Flame Test Compliances:
- IEEE 383 (70,000 BTU/hr)
- ICEA T-29-520 (210,000 BTU/hr)
- UL VW-1

Other:
- Quality assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- NIAC
- NUPIC

Packaging:
- Material to be shipped on non-returnable wooden reels

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® Heavy Wall, Single Conductor, Power Cable, Class 1E Nuclear

600 V, 90°C, VW-1, UL Type RHH/RHW-2

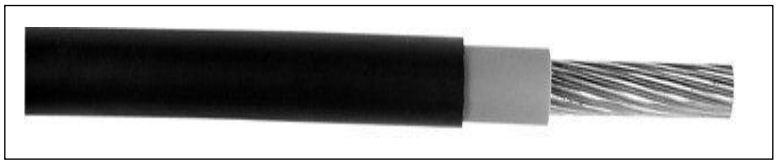
ULTROL® HEAVY WALL, SINGLE CONDUCTOR, POWER CABLE, CLASS 1E NUCLEAR, 600 V, 90°C, VW-1, UL TYPE RHH/RHW-2

Catalog Number	Cond. Size (AWG/ kcmil)	Cond. Strand	Min. Avg. Insulation Thickness		Nom. Cable Diameter		Copper Weight		Net Weight	
			Inches	mm	Inches	mm	lbs/ 1000 ft.	kg/ km	lbs/ 1000 ft.	kg/ km
379380	14	7/.0242	0.045	1.14	0.163	4.14	13	19	22	33
379390	12	7/.0305	0.045	1.14	0.182	4.62	20	30	32	47
379400	10	7/.0385	0.045	1.14	0.205	5.21	32	48	46	68
379410	8	7/.0486	0.060	1.52	0.266	6.76	51	76	74	110
379420	6	7/.0612	0.060	1.52	0.303	7.70	81	121	109	162
384540	4	7/.0772	0.060	1.52	0.350	8.89	129	192	163	242
379440	2	7/.0974	0.060	1.52	0.409	10.4	205	305	247	368
379450	1	19/.0664	0.080	2.03	0.488	12.4	258	384	319	474
379460	1/0	19/.0745	0.080	2.03	0.527	13.4	326	485	393	585
379470	2/0	19/.0837	0.080	2.03	0.572	14.5	411	612	486	723
379480	3/0	19/.0940	0.080	2.03	0.622	15.8	518	771	601	894
379490	4/0	19/.1055	0.080	2.03	0.678	17.2	653	972	746	1110
379500	250	37/.0822	0.095	2.41	0.754	19.2	772	1149	889	1323
379510	350	37/.0973	0.095	2.41	0.857	21.8	1081	1609	1218	1813
379520	500	37/.1162	0.095	2.41	0.986	25.0	1544	2297	1707	2540
379530	750	61/.1109	0.110	2.79	1.199	30.5	2316	3446	2543	3783
379540	1000	61/.1280	0.110	2.79	1.349	34.3	3088	4595	3349	4983

Dimensions and weights are subject to industry tolerance.

Ultrol® Dual Wall, Single Conductor, Power Cable, Class 1E Nuclear

600 V, 90°C, VW-1, UL Type RHH/RHW-2



Product Construction:

Conductor:
- 14 AWG thru 1000 kcmil tinned, annealed copper per ASTM B33; Class B stranding per ASTM B8

Insulation:
- Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol® Cross-Linked Polyethylene (FR-XLPE) - Black

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black

Print:
- For 14 AWG thru 4/ 0 AWG:
  GENERAL CABLE BRAND REX
  BRAND (WC) ULTROL 1/C XXAWG
  COPPER FR-XLPE (UL) TYPE
  RHH/RHW-2 600V 90ºC VW-1
  NUCLEAR YEAR OF MFG
  Note: Sizes 1/ 0 AWG & larger include:
  TRACEABILITY NUMBER &
  SEQUENTIAL FOOTAGE MARK
- For 250 kcmil thru 1000 kcmil:
  GENERAL CABLE BRAND REX
  BRAND (WC) ULTROL 1/C XXXKCMIL
  COPPER FR-XLPE (UL) TYPE
  RHH/RHW-2 600V 90ºC VW-1
  NUCLEAR YEAR OF MFG
  TRACEABILITY NUMBER
  SEQUENTIAL FOOTAGE MARK

Options:
- Conductor stranding
- Full-colored insulation
- CT USE and SUNLIGHT RESISTANT for 1/0 AWG and larger

Applications:
- Ultrol Power cable is a 600 V, insulated dual wall, single conductor Class 1E rated wire construction specifically designed for applications in nuclear generating stations and where additional jacketing protection is required.
- For use in Class 1E low voltage power and lighting functions where optimum performance is required
- May be installed in trays, conduit, ducts, or direct buried.

Features:
- Rated at 90ºC wet or dry
- Fully traceable
- Qualified for 40-year service life
- Radiation resistant (up to 200 megarads)
- Long-term thermal endurance and superior electricals
- Excellent mechanical cut through properties
- Long-term moisture and radiation stability
- Free stripping for ease of termination
- Meets the cold bend test at -40°C

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-95-658 (formerly ICEA S-66-524 & S-19-81)
- UL 44 RHH/RHW-2

Flame Test Compliances:
- IEEE 383 (70,000 BTU/hr)
- ICEA T-29-520 (210,000 BTU/hr)
- UL VW-1

Other:
- Quality assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- NIAC
- NUPIC

Packaging:
- Material to be shipped on non-returnable wooden reels

Brand Rex BRAND

General Cable

Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® Dual Wall, Single Conductor, Power Cable, Class 1E Nuclear

600 V, 90°C, VW-1, UL Type RHH/RHW-2

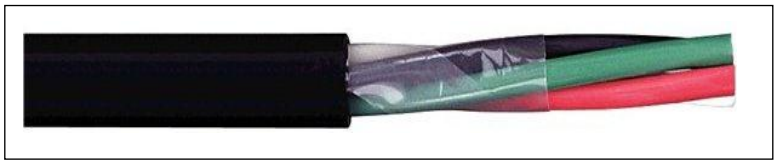
ULTROL® DUAL WALL, SINGLE CONDUCTOR, POWER CABLE, CLASS 1E NUCLEAR, 600 V, 90°C, VW-1, UL TYPE RHH/RHW-2

Catalog Number	Cond. Size (AWG/ kcmil)	Cond. Strand	Min. Avg. Insulation Thickness		Min. Avg. Jacket Thickness		Nom. Cable Diameter		Copper Weight		Net Weight	
			Inches	mm	Inches	mm	Inches	mm	lbs/ 1000 ft.	kg/ km	lbs/ 1000 ft.	kg/ km
379550	14	7/.0242	0.030	0.76	0.015	0.38	0.165	4.19	13	19	23	34
379560	12	7/.0305	0.030	0.76	0.015	0.38	0.184	4.67	20	30	32	48
397150	10	7/.0385	0.030	0.76	0.015	0.38	0.207	5.26	32	48	46	69
379580	8	7/.0486	0.045	1.14	0.015	0.38	0.268	6.81	51	76	75	112
379590	6	7/.0612	0.045	1.14	0.030	0.76	0.336	8.53	81	121	119	177
379600	4	7/.0772	0.045	1.14	0.030	0.76	0.383	9.73	129	192	175	260
379610	2	7/.0974	0.045	1.14	0.030	0.76	0.442	11.2	205	305	261	388
379620	1	19/.0664	0.055	1.40	0.045	1.14	0.530	13.5	258	384	340	506
379630	1/0	19/.0745	0.055	1.40	0.045	1.14	0.569	14.5	326	485	416	620
379640	2/0	19/.0837	0.055	1.40	0.045	1.14	0.614	15.6	411	612	511	760
379650	3/0	19/.0940	0.055	1.40	0.045	1.14	0.664	16.9	518	771	629	935
379660	4/0	19/.1055	0.055	1.40	0.045	1.14	0.720	18.3	653	972	776	1154
379670	250	37/.0822	0.065	1.65	0.065	1.65	0.829	21.1	772	1149	947	1410
379680	350	37/.0973	0.065	1.65	0.065	1.65	0.932	23.7	1081	1609	1284	1911
379690	500	37/.1162	0.065	1.65	0.065	1.65	1.061	27.0	1544	2297	1783	2653
379700	750	61/.1109	0.080	2.03	0.065	1.65	1.271	32.3	2316	3446	2631	3915
379710	1000	61/.1280	0.080	2.03	0.065	1.65	1.421	36.1	3088	4595	3448	5131

Dimensions and weights are subject to industry tolerance.

Ultrol® Instrumentation Cable, Multi-Conductor, Class 1E Nuclear

600 V, 90°C, VW-1



Product Construction:

Conductor:
- 18 AWG and 16 AWG tinned, annealed copper per ASTM B33; Class B stranding per ASTM B8

Insulation:
- Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol® Cross-Linked Polyethylene (FR-XLPE)
- Color code: Per ICEA Method 1, Table E-1

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black

Print:
- GENERAL CABLE BRAND REX BRAND (WC) ULTROL XX/C XXAWG COPPER FR-XLPE CSPE 600V 90°C YEAR OF MFG TRACEABILITY NUMBER SEQUENTIAL FOOTAGE MARK

Options:
- Conductor stranding
- 300 V & 1000 V
- Overall galvanized steel or aluminum interlocked armor sheath

Applications:
- Ultrol Instrumentation cable is a 600 V multi-conductor, thermoset, Class 1E rated construction specifically designed for applications in nuclear generating stations and where flame retardancy is critical.
- For use in Class 1E monitoring data recording and transmitting information on low energy circuits where shielding from external electrostatic interference is not required.
- Can be installed in trays, conduit, ducts, or in direct burial applications.

Features:
- Rated at 90ºC wet or dry
- Fully traceable
- Qualified for 40-year service life
- Radiation resistant (up to 200 megarads)
- Maximum flame-retardancy
- Long-term moisture and radiation stability
- Long-term thermal endurance and superior electricals
- Excellent mechanical cut through properties.
- Free stripping for ease of termination
- Meets cold bend test at -40°C

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

Flame Test Compliances:
- IEEE 383 (70,000 BTU/hr) as modified by NRC Reg. Guide 1.131
- IEEE 1202 (70,000 BTU/hr)
- ICEA T-29-520 (210,000 BTU/hr)
- VW-1

Other:
- Quality assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- NUPIC
- NIAC

Packaging:
- Material to be shipped on non-returnable wooden reels

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® Instrumentation Cable, Multi-Conductor, Class 1E Nuclear

600 V, 90°C, VW-1

ULTROL® INSTRUMENTATION CABLE, MULTI-CONDUCTOR, CLASS 1E NUCLEAR, 600V, 90°C, VW-1

Catalog Number	No. of Cond.	Cond. Size (AWG)	Cond. Strand	Min. Avg. Insulation Thickness		Min. Avg. Jacket Thickness		Nom. Cable Diameter		Copper Weight		Net Weight	
				Inches	mm	Inches	mm	Inches	mm	lbs/ 1000 ft.	kg/ km	lbs/ 1000 ft.	kg/ km
377550	2/C Flat	18	7/.0152	0.025	0.64	0.045	1.14	0.200 x 0.305	5.08 x 7.77	10	15	46	68
377560	2/C	18	7/.0152	0.025	0.64	0.045	1.14	0.305	7.75	10	15	51	76
377570	3/C	18	7/.0152	0.025	0.64	0.045	1.14	0.315	8.00	15	23	57	85
377580	4/C	18	7/.0152	0.025	0.64	0.045	1.14	0.340	8.64	20	30	71	106
377590	5/C	18	7/.0152	0.025	0.64	0.045	1.14	0.370	9.40	25	38	79	118
377600	7/C	18	7/.0152	0.025	0.64	0.045	1.14	0.400	10.16	35	53	98	146
377610	9/C	18	7/.0152	0.025	0.64	0.045	1.14	0.460	11.68	46	68	122	182
377620	12/C	18	7/.0152	0.025	0.64	0.045	1.14	0.515	13.08	51	76	154	229
377630	19/C	18	7/.0152	0.025	0.64	0.060	1.52	0.630	16.0	96	143	241	359
377640	25/C	18	7/.0152	0.025	0.64	0.060	1.52	0.730	18.54	127	189	308	458
377650	30/C	18	7/.0152	0.025	0.64	0.060	1.52	0.765	19.43	151	225	351	522
377660	37/C	18	7/.0152	0.025	0.64	0.060	1.52	0.830	21.05	188	280	425	632
377670	2/C Flat	16	7/.0192	0.025	0.64	0.045	1.14	0.210 x 0.320	5.33 x 8.13	16	24	54	80
377680	2/C	16	7/.0192	0.025	0.64	0.045	1.14	0.320	8.13	16	24	56	83
377690	3/C	16	7/.0192	0.025	0.64	0.045	1.14	0.335	8.51	24	36	69	103
377700	4/C	16	7/.0192	0.025	0.64	0.045	1.14	0.365	9.27	32	48	85	127
377710	5/C	16	7/.0192	0.025	0.64	0.045	1.14	0.395	10.03	40	60	99	147
377720	7/C	16	7/.0192	0.025	0.64	0.045	1.14	0.430	10.92	57	84	128	190
377730	9/C	16	7/.0192	0.025	0.64	0.045	1.14	0.500	12.7	73	108	160	238
377740	12/C	16	7/.0192	0.025	0.64	0.060	1.52	0.590	15.0	97	145	221	329
377750	19/C	16	7/.0192	0.025	0.64	0.060	1.52	0.680	17.27	154	229	318	473
377760	25/C	16	7/.0192	0.025	0.64	0.060	1.52	0.790	20.07	203	302	406	604
377770	30/C	16	7/.0192	0.025	0.64	0.060	1.52	0.880	22.35	244	363	512	762
377780	37/C	16	7/.0192	0.025	0.64	0.080	2.03	0.945	24.0	300	447	615	915

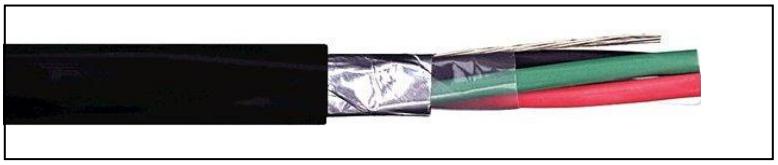
Insulated Conductor Diameter (Inches) 18 AWG (.10) and 16 AWG (.11).
Dimensions and weights are subject to industry tolerance.

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® Instrumentation Cable, Multi-Conductor, Overall Shield, Class 1E Nuclear

600 V, 90°C, VW-1



Product Construction:

Conductor:
- 18 AWG and 16 AWG tinned, annealed copper per ASTM B33; Class B stranding per ASTM B8

Insulation:
- Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol® Cross-Linked Polyethylene (FR-XLPE)
- Color code: Per ICEA Method 1, Table E-1

Overall Shield:
- Aluminum/polyester tape in contact with a stranded tinned copper drain wire

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black

Print:
- GENERAL CABLE BRAND REX BRAND (WC) ULTROL XX/C XXAWG COPPER FR-XLPE (SHIELDED) CSPE 600V 90°C YEAR OF MFG TRACEABILITY NUMBER SEQUENTIAL FOOTAGE MARK

Options:
- Conductor stranding
- 300 V & 1000 V
- Copper/mylar tape shield with drain wire
- Tinned copper braid shield
- Overall galvanized steel or aluminum interlocked armor sheath

Applications:
- Ultrol Instrumentation cable is a 600 V overall shielded multi-conductor, thermoset, Class 1E rated construction specifically designed for applications in nuclear generating stations and where flame retardancy is critical.
- Designed for use on circuits where overall shielding is required to protect from external electrostatic interference, but not shielding between conductors.
- Can be installed in trays, conduit, ducts, or in direct burial applications.

Features:
- Rated at 90ºC wet or dry
- Fully traceable
- Qualified for 40-year service life
- Radiation resistant (up to 200 megarads)
- Maximum flame-retardancy
- Long-term moisture and radiation stability

Features: (con't)
- Long-term thermal endurance and superior electricals
- Excellent mechanical cut through properties.
- Free stripping for ease of termination
- Meets cold bend test at -40°C

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

Flame Test Compliances:
- IEEE 383 (70,000 BTU/hr) as modified by NRC Reg. Guide 1.131
- IEEE 1202 (70,000 BTU/hr)
- ICEA T-29-520 (210,000 BTU/hr)
- VW-1

Other:
- Quality assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- NUPIC
- NIAC

Packaging:
- Material to be shipped on non-returnable wooden reels

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® Instrumentation Cable, Multi-Conductor, Overall Shield, Class 1E Nuclear

600 V, 90°C, VW-1

ULTROL® INSTRUMENTATION CABLE, MULTI-CONDUCTOR, OVERALL SHIELD, CLASS 1E NUCLEAR
600 V, 90°C, VW-1

Catalog Number	No. of Cond.	Cond. Size (AWG)	Cond. Strand	Min. Avg. Insulation Thickness		Drain Wire (AWG)	Min. Avg. Jacket Thickness		Nom. Cable Diameter		Copper Weight		Net Weight	
				Inches	mm	Size	Inches	mm	Inches	mm	lbs/ 1000 ft.	kg/ km	lbs/ 1000 ft.	kg/ km
377800	2/C	18	7/.0152	0.025	0.64	20	0.045	1.14	0.291	7.39	13	20	53	79
377810	3/C	18	7/.0152	0.025	0.64	20	0.045	1.14	0.306	7.77	18	27	57	85
377820	4/C	18	7/.0152	0.025	0.64	20	0.045	1.14	0.332	8.43	23	35	74	110
377830	5/C	18	7/.0152	0.025	0.64	20	0.045	1.14	0.399	10.1	29	42	81	121
377840	7/C	18	7/.0152	0.025	0.64	20	0.045	1.14	0.428	10.9	39	57	101	150
377850	9/C	18	7/.0152	0.025	0.64	20	0.045	1.14	0.488	12.4	49	73	125	186
377860	12/C	18	7/.0152	0.025	0.64	20	0.060	1.52	0.571	14.5	64	96	157	234
377870	19/C	18	7/.0152	0.025	0.64	20	0.060	1.52	0.654	16.6	99	148	243	362
377880	25/C	18	7/.0152	0.025	0.64	20	0.060	1.52	0.747	19.0	130	194	309	460
377890	30/C	18	7/.0152	0.025	0.64	20	0.060	1.52	0.793	20.1	155	231	356	530
377900	37/C	18	7/.0152	0.025	0.64	20	0.080	2.03	0.890	22.6	191	284	428	637
377910	2/C	16	7/.0192	0.025	0.64	18	0.045	1.14	0.309	7.85	21	32	61	91
377920	3/C	16	7/.0192	0.025	0.64	18	0.045	1.14	0.325	8.26	29	44	73	109
377930	4/C	16	7/.0192	0.025	0.64	18	0.045	1.14	0.353	8.97	37	56	88	131
377940	5/C	16	7/.0192	0.025	0.64	18	0.045	1.14	0.433	11.0	46	68	104	155
377950	7/C	16	7/.0192	0.025	0.64	18	0.045	1.14	0.465	11.8	62	92	131	195
377960	9/C	16	7/.0192	0.025	0.64	18	0.060	1.52	0.561	14.3	78	116	164	244
377970	12/C	16	7/.0192	0.025	0.64	18	0.060	1.52	0.620	15.8	103	153	224	333
377980	19/C	16	7/.0192	0.025	0.64	18	0.060	1.52	0.711	18.1	159	237	321	478
377990	25/C	16	7/.0192	0.025	0.64	18	0.060	1.52	0.814	20.7	208	310	409	609
378000	30/C	16	7/.0192	0.025	0.64	18	0.080	2.03	0.904	23.0	249	371	516	768
378010	37/C	16	7/.0192	0.025	0.64	18	0.080	2.03	0.967	24.6	305	454	612	911

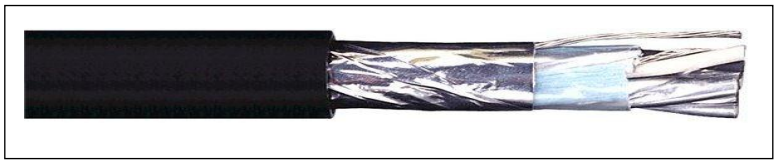
Insulated Conductor Diameter (Inches) 18 AWG (.10) and 16 AWG (.11).
Dimensions and weights are subject to industry tolerance.

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® Instrumentation Cable, Individually Shielded Pairs or Triads, Overall Shield, Class 1E Nuclear

600 V, 90°C, VW-1



Product Construction:

Conductor:
- 18 AWG and 16 AWG tinned, annealed copper per ASTM B33; Class B stranding per ASTM B8

Insulation:
- Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol® Cross-Linked Polyethylene (FR-XLPE)
- Color code: Per ICEA Method 1 — Pairs: black and white; Triads: black, white and red. One conductor in each pair/triad is printed alpha-numerically for easy identification

Shields:
- Individually shielded: pairs or triads are 100% shielded with an aluminum/polyester tape in contact with a stranded tinned copper drain wire
- Overall shield: aluminum/polyester tape in contact with a stranded tinned copper drain wire

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black

Print:
- GENERAL CABLE BRAND REX BRAND (WC) ULTROL XX/PR OR TRIADS XXAWG COPPER FR-XLPE (SHIELDED) CSPE 600V 90°C YEAR OF MFG TRACEABILITY NUMBER SEQUENTIAL FOOTAGE MARK

Options:
- Conductor stranding
- 300V & 1000V
- Copper/ mylar tape shield with drain wire
- Tinned copper braid shield
- Overall galvanized steel or aluminum interlocked armor sheath

Applications:
- Ultrol Instrumentation cable is 600 V individual shielded pairs or triads with overall shield, thermoset, Class 1E rated constructions specifically designed for applications in nulcear generating stations and where flame retardancy is critical.
- Designed for use on critical circuits where total isolation is required between pairs/triads and from external interference.
- Can be installed in trays, conduit, ducts, or in direct burial applications.

Features:
- Rated at 90ºC wet or dry
- Fully traceable
- Qualified for 40-year service life
- Radiation resistant (up to 200 megarads)
- Maximum flame-retardancy
- Long-term moisture and radiation stability

Features: (con't)
- Long-term thermal endurance and superior electricals
- Excellent mechanical cut through properties.
- Free stripping for ease of termination
- Meets cold bend test at -40°C

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

Flame Test Compliances:
- IEEE 383 (70,000 BTU/hr) as modified by NRC Reg. Guide 1.131
- IEEE 1202 (70,000 BTU/hr)
- ICEA T-29-520 (210,000 BTU/hr)
- VW-1

Other:
- Quality assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- NUPIC
- NIAC

Packaging:
- Material to be shipped on non-returnable wooden reels

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® Instrumentation Cable, Individually Shielded Pairs or Triads, Overall Shield, Class 1E Nuclear

600 V, 90°C, VW-1

ULTROL® INSTRUMENTATION CABLE, INDIVIDUALLY SHIELDED PAIRS OR TRIADS, OVERALL SHIELD, CLASS 1E NUCLEAR, 600 V, 90°C, VW-1

Catalog Number	No. of Pairs/ Triads	Cond. Size (AWG)	Cond. Strand	Min. Avg. Insulation Thickness		Drain Wire Size	Min. Avg. Jacket Thickness		Nom. Cable Diameter		Copper Weight		Net Weight	
				Inches	mm	AWG	Inches	mm	Inches	mm	lbs/ 1000 ft.	kg/ km	lbs/ 1000 ft.	kg/ km
378040	2 SPS	18	7/.0152	0.025	0.64	20	0.045	1.14	0.462	11.7	30	45	129	192
378050	3 SPS	18	7/.0152	0.025	0.64	20	0.045	1.14	0.490	12.5	43	65	159	237
378060	4 SPS	18	7/.0152	0.025	0.64	20	0.060	1.52	0.567	14.4	57	85	226	336
378070	5 SPS	18	7/.0152	0.025	0.64	20	0.060	1.52	0.619	15.7	70	105	267	397
378080	7 SPS	18	7/.0152	0.025	0.64	20	0.060	1.52	0.673	17.1	97	145	291	433
378090	9 SPS	18	7/.0152	0.025	0.64	20	0.060	1.52	0.784	19.9	125	186	362	539
378100	12 SPS	18	7/.0152	0.025	0.64	20	0.080	2.03	0.923	23.4	165	246	500	744
378110	19 SPS	18	7/.0152	0.025	0.64	20	0.080	2.03	1.077	27.4	259	385	664	988
378120	2 SPS	16	7/.0192	0.025	0.64	18	0.045	1.14	0.495	12.6	48	71	166	247
378130	3 SPS	16	7/.0192	0.025	0.64	18	0.060	1.52	0.556	14.1	69	103	222	330
378140	4 SPS	16	7/.0192	0.025	0.64	18	0.060	1.52	0.608	15.4	91	135	284	423
378150	5 SPS	16	7/.0192	0.025	0.64	18	0.060	1.52	0.665	16.9	113	168	342	509
378160	7 SPS	16	7/.0192	0.025	0.64	18	0.060	1.52	0.725	18.4	156	232	376	560
378170	9 SPS	16	7/.0192	0.025	0.64	18	0.080	2.03	0.887	22.5	199	296	517	769
378180	12 SPS	16	7/.0192	0.025	0.64	18	0.080	2.03	0.996	25.3	264	393	651	969
378190	19 SPS	16	7/.0192	0.025	0.64	18	0.080	2.03	1.164	29.6	414	616	882	1313
378200	2 STS	18	7/.0152	0.025	0.64	20	0.045	1.14	0.489	12.4	40	60	172	256
378210	3 STS	18	7/.0152	0.025	0.64	20	0.045	1.14	0.519	13.2	59	87	215	320
378220	4 STS	18	7/.0152	0.025	0.64	20	0.060	1.52	0.599	15.2	77	115	308	458
378230	5 STS	18	7/.0152	0.025	0.64	20	0.060	1.52	0.655	16.6	96	143	364	542
378240	7 STS	18	7/.0152	0.025	0.64	20	0.060	1.52	0.714	18.1	133	198	400	595
378250	9 STS	18	7/.0152	0.025	0.64	20	0.060	1.52	0.833	21.2	170	253	493	734
378260	12 STS	18	7/.0152	0.025	0.64	20	0.080	2.03	0.979	24.9	226	336	685	1019
378270	19 STS	18	7/.0152	0.025	0.64	20	0.080	2.03	1.145	29.1	356	530	910	1354
378280	2 STS	16	7/.0192	0.025	0.64	18	0.060	1.52	0.554	14.1	64	96	223	332
378290	3 STS	16	7/.0192	0.025	0.64	18	0.060	1.52	0.587	14.9	94	139	300	447
378300	4 STS	16	7/.0192	0.025	0.64	18	0.060	1.52	0.642	16.3	124	185	389	579
378310	5 STS	16	7/.0192	0.025	0.64	18	0.060	1.52	0.704	17.9	154	229	465	692
378320	7 STS	16	7/.0192	0.025	0.64	18	0.060	1.52	0.768	19.5	213	317	515	766
378330	9 STS	16	7/.0192	0.025	0.64	18	0.080	2.03	0.939	23.9	272	405	709	1055
378340	12 STS	16	7/.0192	0.025	0.64	18	0.080	2.03	1.055	26.8	361	537	892	1328
378350	19 STS	16	7/.0192	0.025	0.64	18	0.080	2.03	1.236	31.4	569	847	1208	1798

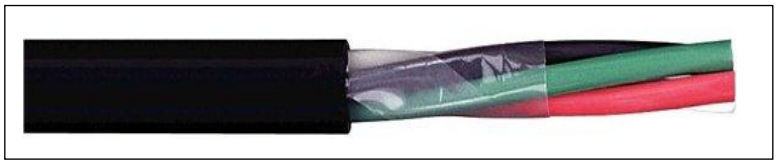
Insulated Conductor Diameter (Inches) 18 AWG (.10) and 16 AWG (.11).
Dimensions and weights are subject to industry tolerance.

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® Control Cable, Multi-Conductor, Class 1E Nuclear

600 V, 90°C, VW-1, UL Type TC



Product Construction:

Conductor:
- 14 AWG thru 10 AWG tinned, annealed copper; Class B stranding; 2 thru 37 conductors

Insulation:
- Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol® Cross-Linked Polyethylene (FR-XLPE)
- Color code: Per ICEA Method 1, Table E-1

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) - Black

Print:
- GENERAL CABLE BRAND REX BRAND (WC) ULTROL XX/C XXAWG COPPER FR-XLPE CSPE 600V 90°C YEAR OF MFG TRACEABILITY NUMBER SEQUENTIAL FOOTAGE MARK

Options:
- Conductor stranding
- 1 kV & 2 kV
- E-2 color code
- Overall galvanized steel or aluminum interlocked armor sheath

Applications:
- Ultrol Control cable is a 600 V multi-conductor, thermoset, Class 1E rated construction specifically designed for applications in nulcear generating stations and where flame retardancy is critical.
- For use in Class 1E power distribution and control circuits for power lighting, control and signal circuits.
- Can be installed in trays, conduit, ducts, or in direct burial applications.

Features:
- Rated at 90ºC wet or dry
- Fully traceable
- Qualified for 40-year service life
- Radiation resistant (up to 200 megarads)
- Long-term thermal endurance and superior electricals
- Excellent mechanical cut through properties.
- Long term moisture and radiation stability
- Free stripping for ease of termination
- Meets cold bend test at -40°C

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532 (formerly ICEA S-66-524 & S-19-81)
- UL 1277 Type TC
- UL 44 XHHW-2

Flame Test Compliances:
- IEEE 383 (70,000 BTU/hr) as modified by NRC Reg. Guide 1.131
- IEEE 1202 (70,000 BTU/hr)
- ICEA T-29-520 (210,000 BTU/hr)
- UL VW-1

Other:
- Quality assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- NIAC
- NUPIC

Packaging:
- Material to be shipped on non-returnable wooden reels

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® Control Cable, Multi-Conductor, Class 1E Nuclear

600 V, 90°C, VW-1, UL Type TC

ULTROL® CONTROL CABLE, MULTI-CONDUCTOR, CLASS 1E NUCLEAR, 600 V, 90°C, VW-1, UL TYPE TC

Catalog Number	No. of Cond.	Cond. Size (AWG)	Cond. Strand	Min. Avg. Insulation Thickness		Min. Avg. Jacket Thickness		Nom. Cable Diameter		Copper Weight		Net Weight	
				Inches	mm	Inches	mm	Inches	mm	lbs/ 1000 ft.	kg/ km	lbs/ 1000 ft.	kg/ km
378360	2/C Flat	14	7/.0242	0.030	0.76	0.045	1.14	0.223 x 0.356	5.66 x 9.04	25	38	78	116
378370	2/C	14	7/.0242	0.030	0.76	0.045	1.14	0.359	9.12	26	38	82	121
378380	3/C	14	7/.0242	0.030	0.76	0.045	1.14	0.379	9.63	38	57	93	138
378390	4/C	14	7/.0242	0.030	0.76	0.045	1.14	0.414	10.5	51	76	116	173
378400	5/C	14	7/.0242	0.030	0.76	0.045	1.14	0.452	11.5	64	95	135	201
378410	7/C	14	7/.0242	0.030	0.76	0.045	1.14	0.492	12.5	90	134	190	283
378420	9/C	14	7/.0242	0.030	0.76	0.060	1.52	0.603	15.3	116	173	262	390
378430	12/C	14	7/.0242	0.030	0.76	0.060	1.52	0.675	17.2	155	231	322	479
378440	19/C	14	7/.0242	0.030	0.76	0.060	1.52	0.785	19.9	245	365	505	752
378450	25/C	14	7/.0242	0.030	0.76	0.080	2.03	0.951	24.2	321	478	630	938
378460	30/C	14	7/.0242	0.030	0.76	0.080	2.03	1.013	25.7	385	573	790	1176
378470	37/C	14	7/.0242	0.030	0.76	0.080	2.03	1.091	27.7	476	708	880	1310
378500	2/C Flat	12	7/.0305	0.030	0.76	0.045	1.14	0.242 x 0.394	6.15 x 10.01	41	60	95	141
378510	2/C	12	7/.0305	0.030	0.76	0.045	1.14	0.397	10.1	41	61	106	158
378520	3/C	12	7/.0305	0.030	0.76	0.045	1.14	0.420	10.7	61	91	123	183
378530	4/C	12	7/.0305	0.030	0.76	0.045	1.14	0.460	11.7	81	121	172	256
378540	5/C	12	7/.0305	0.030	0.76	0.045	1.14	0.503	12.8	102	152	205	305
378550	7/C	12	7/.0305	0.030	0.76	0.060	1.52	0.579	14.7	143	213	276	411
378560	9/C	12	7/.0305	0.030	0.76	0.060	1.52	0.671	17.1	184	274	360	536
362030	12/C	12	7/.0305	0.030	0.76	0.060	1.52	0.754	19.2	245	365	456	679
378580	19/C	12	7/.0305	0.030	0.76	0.080	2.03	0.923	23.4	389	579	705	1049
378590	25/C	12	7/.0305	0.030	0.76	0.080	2.03	1.067	27.1	512	762	875	1302
378600	30/C	12	7/.0305	0.030	0.76	0.080	2.03	1.138	28.9	613	912	1015	1511
378610	37/C	12	7/.0305	0.030	0.76	0.080	2.03	1.227	31.2	756	1125	1223	1820
378640	2/C Flat	10	7/.0385	0.030	0.76	0.045	1.14	0.265 x 0.440	6.73 x 11.18	64	96	132	196
378650	2/C	10	7/.0385	0.030	0.76	0.045	1.14	0.443	11.3	65	96	140	208
378660	3/C	10	7/.0385	0.030	0.76	0.045	1.14	0.470	11.9	97	144	170	253
378670	4/C	10	7/.0385	0.030	0.76	0.045	1.14	0.515	13.1	130	194	251	374
378680	5/C	10	7/.0385	0.030	0.76	0.060	1.52	0.595	15.1	162	241	309	460
378690	7/C	10	7/.0385	0.030	0.76	0.060	1.52	0.648	16.5	227	338	374	557
378700	9/C	10	7/.0385	0.030	0.76	0.060	1.52	0.754	19.2	292	435	523	778
378710	12/C	10	7/.0385	0.030	0.76	0.080	2.03	0.890	22.6	390	580	658	979
378720	19/C	10	7/.0385	0.030	0.76	0.080	2.03	1.038	26.4	614	918	976	1453

Insulated Conductor Diameter (Inches) 14 AWG (.14), 12 AWG (.16) and 10 AWG (.18).
Dimensions and weights are subject to industry tolerance.

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Ultrol® Control Cable, Multi-Conductor, Overall Shield, Class 1E Nuclear

600 V, 90°C, VW-1, UL Type TC

Product Construction:

Conductor:
- 14 AWG thru 10 AWG, tinned, annealed, copper; Class B stranding; 2 thru 37 conductors.

Insulation:
- Flame-retardant , heat-, moisture- and radiation-resistant, thermoset Ultrol® Cross-Linked Polyethylene (FR-XLPE)
- Color code: per ICEA Method 1, Table E-1

Overall Shield:
- Aluminum/polyester tape in contact with a stranded tinned copper drain wire

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) — Black

Print:
- GENERAL CABLE BRAND REX BRAND (WC) ULTROL XX/C XXAWG COPPER FR-XLPE (SHIELDED) CSPE 600V 90°C YEAR OF MFG TRACEABILITY NUMBER SEQUENTIAL FOOTAGE MARK

Options:
- Conductor stranding
- 1 kV & 2 kV
- E-2 color code
- Helical copper tape shield
- Longitudinal corrugated tinned copper tape shield
- Overall galvanized steel or aluminum interlocked armor sheath

Applications:
- Ultrol Control cable is a 600 V overall shielded multi-conductor, thermoset, Class 1E rated construction specifically designed for applications in nuclear generating stations and where flame retardancy is critical.
- Where optimum performance is required for use on Class 1E circuits when shielding from external electrostatic interference is required.
- Can be installed in trays, conduit, ducts, or in direct burial applications.

Features:
- Rated at 90ºC wet or dry
- Fully traceable
- Qualified for 40-year service life
- Radiation resistant (up to 200 megarads)
- Maximum flame-retardancy
- Long-term moisture and radiation stability
- Long-term thermal endurance and superior electricals

Features: (con't)
- Excellent mechanical cut through properties.
- Free stripping for ease of termination
- Meets cold bend text at -40°C

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532 (formerly ICEA S-66-524 & S-19-81)
- UL 1277 Type TC
- UL 44 XHHW-2

Flame Test Compliances:
- IEEE 383 (70,000 BTU/hr) as modified by NRC Reg. Guide 1.131
- IEEE 1202 (70,000 BTU/hr)
- ICEA T-29-520 (210,000 BTU/hr)
- UL VW-1

Other:
- Quality assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- NIAC
- NUPIC

Packaging:
- Material to be shipped on non-returnable wooden reels

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext: 8712 or 8726
www.generalcable.com

Ultrol® Control Cable, Multi-Conductor, Overall Shield, Class 1E Nuclear

600 V, 90°C, VW-1, UL Type TC

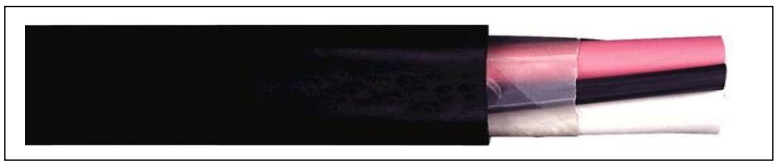
ULTROL® CONTROL CABLE, MULTI-CONDUCTOR, OVERALL SHIELD, CLASS 1E NUCLEAR, 600 V, 90°C, VW-1, UL TYPE TC

Catalog Number	No. of Cond.	Cond. Size (AWG)	Cond. Strand	Min. Avg. Insulation Thickness		Drain Wire Size (AWG)	Min. Avg. Jacket Thickness		Nom. Cable Diameter		Copper Weight		Net Weight	
				Inches	mm		Inches	mm	Inches	mm	lbs/ 1000 ft.	kg/ km	lbs/ 1000 ft.	kg/ km
363640	2/C	14	7/.0242	0.030	0.76	16	0.045	1.14	0.359	9.12	34	50	92	137
378760	3/C	14	7/.0242	0.030	0.76	16	0.045	1.14	0.379	9.63	47	69	103	153
378770	4/C	14	7/.0242	0.030	0.76	16	0.045	1.14	0.414	10.5	59	88	127	189
378780	5/C	14	7/.0242	0.030	0.76	16	0.045	1.14	0.512	13.0	72	108	146	217
378790	7/C	14	7/.0242	0.030	0.76	16	0.060	1.52	0.582	14.8	98	146	202	301
378800	9/C	14	7/.0242	0.030	0.76	16	0.060	1.52	0.663	16.8	124	185	274	408
378810	12/C	14	7/.0242	0.030	0.76	16	0.060	1.52	0.736	18.7	163	243	335	499
378820	19/C	14	7/.0242	0.030	0.76	16	0.080	2.03	0.888	22.6	251	374	519	772
378830	25/C	14	7/.0242	0.030	0.76	16	0.080	2.03	1.014	25.8	330	491	644	958
378840	30/C	14	7/.0242	0.030	0.76	16	0.080	2.03	1.076	27.3	394	586	806	1200
378850	37/C	14	7/.0242	0.030	0.76	16	0.080	2.03	1.154	29.3	484	720	994	1479
378860	2/C	12	7/.0305	0.030	0.76	14	0.045	1.14	0.397	10.0	54	80	122	182
378870	3/C	12	7/.0305	0.030	0.76	14	0.045	1.14	0.420	10.7	74	110	139	207
378880	4/C	12	7/.0305	0.030	0.76	14	0.045	1.14	0.460	11.7	94	140	188	280
378890	5/C	12	7/.0305	0.030	0.76	14	0.060	1.52	0.607	15.4	115	171	221	329
378900	7/C	12	7/.0305	0.030	0.76	14	0.060	1.52	0.653	16.6	156	232	292	435
378910	9/C	12	7/.0305	0.030	0.76	14	0.060	1.52	0.745	18.9	197	293	376	560
378920	12/C	12	7/.0305	0.030	0.76	14	0.060	1.52	0.828	21.0	258	384	472	702
378930	19/C	12	7/.0305	0.030	0.76	14	0.080	2.03	0.997	25.3	401	597	721	1073
378940	25/C	12	7/.0305	0.030	0.76	14	0.080	2.03	1.141	29.0	525	781	892	1328
378950	30/C	12	7/.0305	0.030	0.76	14	0.080	2.03	1.211	30.8	626	932	1032	1536
378960	37/C	12	7/.0305	0.030	0.76	14	0.080	2.03	1.301	33.1	769	1144	1240	1845
378970	2/C	10	7/.0385	0.030	0.76	12	0.045	1.14	0.443	11.3	85	127	165	246
378980	3/C	10	7/.0385	0.030	0.76	12	0.045	1.14	0.470	11.9	118	176	195	290
378990	4/C	10	7/.0385	0.030	0.76	12	0.045	1.14	0.515	13.1	150	223	276	411
379000	5/C	10	7/.0385	0.030	0.76	12	0.060	1.52	0.688	17.5	183	272	334	497
379010	7/C	10	7/.0385	0.030	0.76	12	0.060	1.52	0.740	18.8	248	369	401	597
379020	9/C	10	7/.0385	0.030	0.76	12	0.080	2.03	0.887	22.5	313	466	549	817
379030	12/C	10	7/.0385	0.030	0.76	12	0.080	2.03	0.982	24.9	411	612	684	1018
379040	19/C	10	7/.0385	0.030	0.76	12	0.080	2.03	1.130	28.7	638	950	1001	1490

Insulated Conductor Diameter (Inches) 14 AWG (.14), 12 AWG (.16) and 10 AWG (.18).
Dimensions and weights are subject to industry tolerance.

Ultrol® Power Cable, 3 or 4 Conductors with Ground, Class 1E Nuclear

600 V, 90°C, VW-1, UL Type TC



Product Construction:

Conductor:
- 14 AWG thru 750 kcmil tinned, annealed copper per ASTM B33; Class B stranding per ASTM B8

Insulation:
- Flame-retardant, heat-, moisture- and radiation-resistant, thermoset Ultrol® Cross-Linked Polyethylene (FR-XLPE)
- Color code: Per ICEA Method 4; black with printed numbers

Grounding Conductor(s):
- Tinned, annealed copper, Class B stranding, sized according to NEC® requirements

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE)— Black

Print:
- GENERAL CABLE BRAND REX Brand (WC) ULTROL XX/C XXAWG COPPER FR-XLPE CSPE 600V 90ºC YEAR OF MFG TRACEABILITY NUMBER SEQUENTIAL FOOTAGE MARK

Options:
- Conductor stranding
- 1 kV & 2 kV
- Full-colored insulation
- Helical tinned copper tape shield
- Longitudinal corrugated tinned copper tape shield
- Overall galvanized steel or aluminum interlocked armor sheath

Applications:
- Ultrol Power cable is a 600 V multi-conductor, thermoset, Class 1E rated construction specifically designed for applications in nuclear generating stations and where flame retardancy is critical.
- For use in Class 1E power distribution and control circuits for power lighting, control and signal circuits.
- Can be installed in trays, conduit, ducts, or in direct burial applications.

Features:
- Rated at 90ºC wet or dry
- Fully traceable
- Qualified for 40-year service life
- Radiation resistant (up to 200 megarads)
- Long-term thermal endurance and superior electricals
- Excellent mechanical cut through properties
- Long-term moisture and radiation stability
- Free stripping for ease of termination
- Meets cold bend test at -40°C

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-95-658 (formerly ICEA S-66-524 & S-19-81)
- UL 1277 Type TC
- UL 44 XHHW-2

Flame Test Compliances:
- IEEE 383 (70,000 BTU/hr) as modified by NRC Reg. Guide 1.131
- IEEE 383 (70,000 BTU/hr)
- IEEE 1202 (70,000 BTU/hr)
- ICEA T-29-520 (210,000 BTU/hr)
- UL VW-1

Other:
- Quality assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI N45.2
- ASME NQA-1
- NIAC
- NUPIC

Packaging:
- Material to be shipped on spools on non-returnable wooden reels

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

Brand Rex BRAND

Ultrol® Power Cable, 3 or 4 Conductors with Ground, Class 1E Nuclear

600 V, 90°C, VW-1, UL Type TC

ULTROL® POWER CABLE, 3 OR 4 CONDUCTORS WITH GROUND, CLASS 1E NUCLEAR, 600 V, 90°C, VW-1, UL TYPE TC

Catalog Number	No. of Cond.	Cond. Size (AWG)	Cond. Strand	Min. Avg. Insulation Thickness		Drain Wire Size (AWG)	Min. Avg. Jacket Thickness		Nom. Cable Diameter		Copper Weight		Net Weight	
				Inches	mm		Inches	mm	Inches	mm	lbs/ 1000 ft.	kg/ km	lbs/ 1000 ft.	kg/ km
379050	3/C	8	7/.0486	0.045	1.14	10	0.060	1.52	0.629	16.0	187	278	316	470
379060	4/C	8	7/.0486	0.045	1.14	10	0.060	1.52	0.690	17.5	238	354	391	582
379070	3/C	6	7/.0612	0.045	1.14	8	0.060	1.52	0.708	18.0	297	442	461	686
379080	4/C	6	7/.0612	0.045	1.14	8	0.060	1.52	0.779	19.8	379	564	573	853
379090	3/C	4	7/.0772	0.045	1.14	8	0.060	1.52	0.810	20.6	442	658	680	1012
379100	4/C	4	7/.0772	0.045	1.14	8	0.080	2.03	0.932	23.7	572	851	851	1267
379110	3/C	2	7/.0974	0.045	1.14	6	0.080	2.03	0.977	24.8	701	1043	988	1470
379120	4/C	2	7/.0974	0.045	1.14	6	0.080	2.03	1.075	27.3	908	1351	1246	1854
379130	3/C	1	19/.0664	0.055	1.14	6	0.080	2.03	1.115	28.3	861	1281	1242	1848
379140	4/C	1	19/.0664	0.055	1.14	6	0.080	2.03	1.225	31.1	1122	1670	1670	2485
379150	3/C	1/0	19/.0745	0.055	1.40	6	0.080	2.03	1.186	30.1	1081	1609	1446	2152
379160	4/C	1/0	19/.0745	0.055	1.40	6	0.080	2.03	1.309	33.3	1395	2076	1847	2749
379170	3/C	2/0	19/.0837	0.055	1.40	6	0.080	2.03	1.283	32.6	1323	1969	1749	2603
379180	4/C	2/0	19/.0837	0.055	1.40	6	0.080	2.03	1.418	36.0	1737	2585	2246	3343
379190	3/C	3/0	19/.0940	0.055	1.40	4	0.080	2.03	1.391	35.3	1694	2521	2163	3219
379200	4/C	3/0	19/.0940	0.055	1.40	4	0.080	2.03	1.538	39.1	2217	3299	2778	4134
379210	3/C	4/0	19/.1055	0.055	1.40	4	0.080	2.03	1.511	38.4	2102	3128	2638	3926
379220	4/C	4/0	19/.1055	0.055	1.40	4	0.110	2.79	1.734	44.0	2760	4107	3512	5227
379230	3/C	250	37/.0822	0.065	1.65	4	0.080	2.03	1.658	42.1	2460	3661	3194	4753
379240	4/C	250	37/.0822	0.065	1.65	4	0.110	2.79	1.898	48.2	3239	4820	4101	6103
379250	3/C	350	37/.0973	0.065	1.65	3	0.110	2.79	2.146	54.5	3437	5115	4320	6429
379260	4/C	350	37/.0973	0.065	1.65	3	0.110	2.79	1.940	49.3	4517	6722	5585	8312
379270	3/C	500	37/.1162	0.065	1.65	2	0.110	2.79	2.218	56.3	4866	7242	5903	8785
379280	4/C	500	37/.1162	0.065	1.65	2	0.110	2.79	2.458	62.4	6424	9560	7646	11379
379290	3/C	750	61/.1109	0.080	2.03	1	0.110	2.79	2.670	67.8	7249	10788	8831	13142
379300	4/C	750	61/.1109	0.080	2.03	1	0.140	3.56	3.025	76.8	9585	14264	11463	17059

Dimensions and weights are subject to industry tolerance.

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
www.generalcable.com

ULTROL® Coaxial and Triaxial, Class 1E Nuclear Cables

Catalog No. (Brand Rex /General Cable)	Equivalent	Imped. (Ω)	Spec. No.	Cond. / Strand/O.D.	Insulation O.D. (in.)	Inner Shield	Intershield Insulation	Outer Shield	Cable O.D. (in.)	Bend Radius (Training/ Pulling)	Weight (lbs/1000ft.)	Capac. (pF/ft)	Insulation Resistance (MΩ-1000 ft.)	Max. Operating. Voltage (volts, RMS)	Dielectric Strength (volts, RMS)
CS50060 / 204330	RG-174/U	50	350	26 AWG / 7/34 BC / .019"	.060 Nom.	-	-	38 AWG TC Braid 95% Min.	.100 Nom	0.8" / 1.2"	8	31.8	25,000	1100	4500
CS50116 / 204220	RG-58C/U	50	375	20 AWG / 10/30 TC / .036"	.119 Nom.	-	-	36 AWG TC Braid 95% Min.	.195 Nom.	1.56" / 2.34"	27	31.8	26,000	1400	5000
CS50285 / 204310	RG-213/U	50	400	12 AWG / 7/.0284 TC / .085	.285 Nom.	-	-	33 AWG TC Braid 95% Min.	.405 Nom.	3.24" / 4.86"	113.5	31.8	26,000	3700	10000
CS75146 / 204200	RG-59B/U	75	425	24 AWG / 16/36 TC / .023	.148 Nom.	-	-	34 AWG TC Braid 95% Min.	.242 Nom.	1.94" / 2.90"	38.2	21.2	40,000	2200	7000
CS75285 / 204190	RG-11A/U	75	450	19 AWG / 7/27 TC / .043	.285 Nom.	-	-	33 AWG TC Braid 95% Min.	.405 Nom.	3.24" / 4.86"	95.2	21.2	40,000	4000	10000
TCD95285 / 203250	RG-22B/U	89	475	18 AWG / 16/30 TC / .046	.092 Nom. / .285 Nom.	34 AWG TC Braid 95% Min.	-	34 AWG TC Braid 95% Min.	.420 Nom.	3.36" / 5.04"	124.7	17.8	15,000	2000	2000
CS95146 / 204210	RG-62B/U	95	500	28 AWG / Solid CCS / .0126	.140 Nom.	-	-	34 AWG TC Braid 95% Min.	.242 Nom.	1.94" / 2.90"	38.8	16.7	52,000	2000	7500
CD95146 / 204300	RG-71B/U	95	525	28 AWG / Solid CCS / .0126	.140 Nom.	34 AWG TC Braid 95% Min.	-	34 AWG TC Braid 95% Min.	.250 Nom.	2.0" / 3.0"	53.4	16.7	52,000	2000	7500
TS75285 / 204250	RG-11A/U	75	550	19 AWG / 7/27 TC / .043	.285 Nom.	33 AWG TC Braid 95% Min.	.365 Nom.	33 AWG TC Braid 95% Min.	.465 Nom.	3.72" / 5.58"	164.5	21.2	40,000	4000	10000

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
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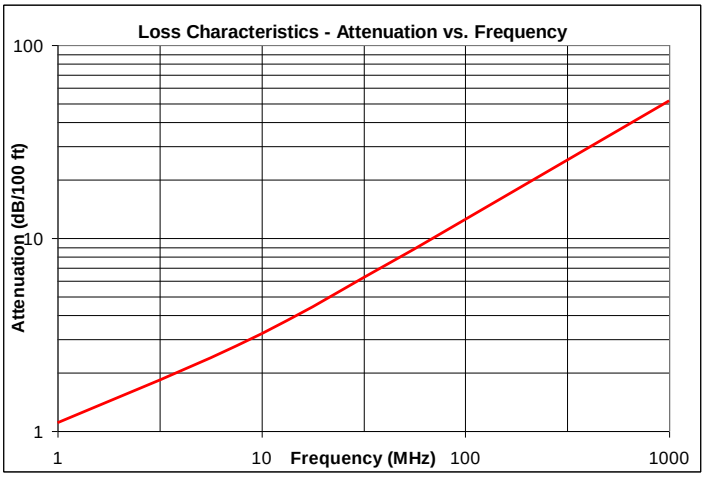
SPEC 350
December, 2010

Ultrol® 50 Ohm Coax, Class 1E Nuclear

RG-174/U Equivalent, CS50060



Product Construction:

Conductor:
- 26 AWG (7/34) bare copperweld 40% conductivity
- O.D.: .019" nom.

Insulation:
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .021" nom.
- O.D.: .060" nom.

Shield:
- 38 AWG tinned copper braid, 95% min. coverage.

Jacket:
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .011" nom.
- O.D.: .100" ± .005"

Print:
- GENERAL CABLE® BRAND REX BRAND (WC) CS50060 COAXIAL RG-174/U TYPE PLUS DAY/MONTH/YEAR OF MANUFACTURE UNIQUE SERIAL NUMBER SEQUENTIAL FOOTAGE MARK

Feature:
- Meets cold bend test at -40°C

Cable Weight:
- 8 lbs/1000 ft nom.

Catalog Number:
- Brand-Rex CS50060
- General Cable 204330

Options:
- Armor – braid or interlocked armor

Mechanical Data:
- Bend Radius:
  - 0.8" (Training)
  - 1.2" (Pulling)
- Cable Area: .0079 in^2
- Braid Strength: 18.4 lbs

Electrical Characteristics:
- Impedance: 50 ohms
- Capacitance: 31.8 pF/ft
- Velocity of Propagation: 64%
- DC Loop Resistance: 110.99 ohms/1000 ft
- Insulation Resistance: 25,000 megohms–1000ft
- Maximum Operating Voltage: 1100 volts, RMS
- Dielectric Strength: 4500 volts, RMS

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

Other:
- Quality Assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI 45.2
- ASME NQA-1
- NIAC
- NUPIC

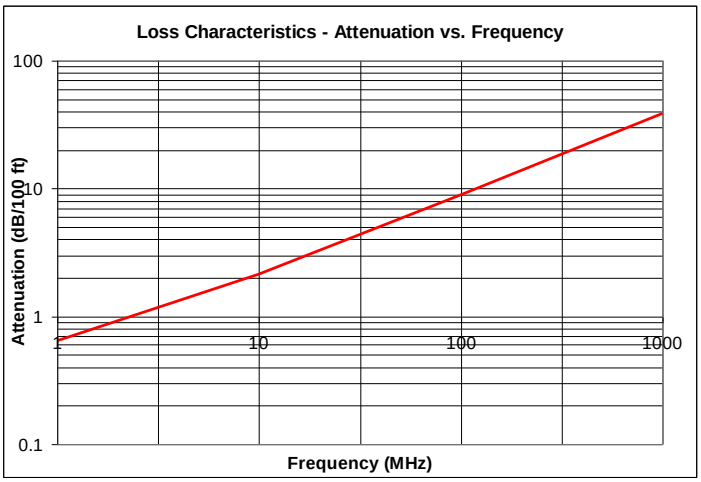
Brand Rex BRAND

General Cable

Phone: (800) 237-6419
Ext. 18712 or 18726
www.generalcable.com

Ultrol® 50 Ohm Coax, Class 1E Nuclear

RG-58C/U Equivalent, CS50116



Product Construction:

Conductor:
- 20 AWG (10/30) tinned copper
- O.D.: .036" nom.

Insulation:
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .041" nom.
- O.D.: .119" nom.

Shield:
- 36 AWG tinned copper braid, 95% min. coverage.

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) – Black
- Wall: .027" nom.
- O.D.: .195" ± .005"

Print:
- GENERAL CABLE® BRAND REX BRAND (WC) CS50116 COAXIAL RG-58C/U TYPE PLUS DAY/MONTH/YEAR OF MANUFACTURE UNIQUE SERIAL NUMBER SEQUENTIAL FOOTAGE MARK

Feature:
- Meets cold bend test at -40°C

Cable Weight:
- 27 lbs/1000 ft nom.

Catalog Number:
- Brand-Rex CS50116
- General Cable 204220

Options:
- Armor – braid or interlocked armor
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene jacket

Mechanical Data:
- Bend Radius:
  - 1.56" (Training)
  - 2.34" (Pulling)
- Cable Area: .030 in^2
- Braid strength: 36 lbs

Electrical Characteristics:
- Impedance: 50 ohms
- Capacitance: 31.8 pF/ft
- Velocity of Propagation: 64%
- DC Loop Resistance: 15.74 ohms/1000 ft
- Insulation Resistance: 26,000 megohms–1000ft
- Maximum Operating Voltage: 1400 volts, RMS
- Dielectric Strength: 5000 volts, RMS

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

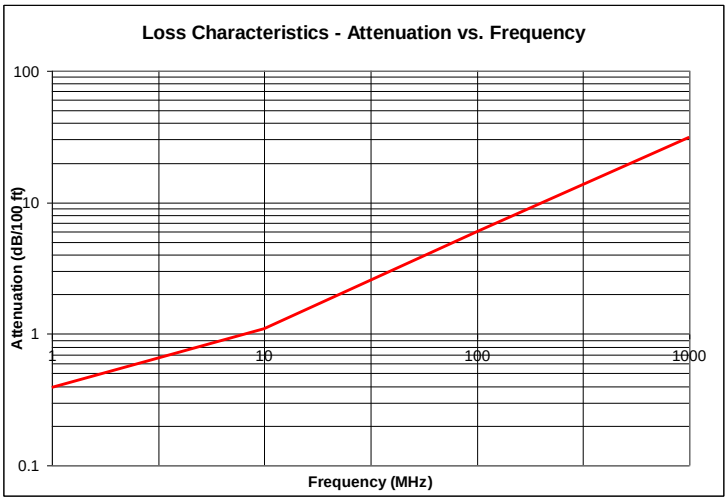
Other:
- Quality Assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI 45.2
- ASME NQA-1
- NIAC
- NUPIC

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 18712 or 18726
www.generalcable.com

Ultrol® 50 Ohm Coax, Class 1E Nuclear

RG-213/U Equivalent, CS50285



Product Construction:

Conductor:
- 12 AWG 7/.0284 tinned copper
- O.D.: .085" nom.

Insulation:
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .100" nom.
- O.D.: .285" nom.

Shield:
- 33 AWG tinned copper braid, 95% min. coverage

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) – Black
- Wall: .044" nom.
- O.D.: .405" ± .005"

Print:
- GENERAL CABLE® BRAND REX BRAND (WC) CS50285 COAXIAL RG-213/U TYPE PLUS DAY/MONTH/YEAR OF MANUFACTURE UNIQUE SERIAL NUMBER SEQUENTIAL FOOTAGE MARK

Feature:
- Meets cold bend test at -40°C

Cable Weight:
- 113.5 lbs/1000 ft

Catalog Number:
- Brand-Rex: CS50285
- General Cable: 204310

Options:
- Armor – braid or interlocked armor
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene jacket

Mechanical Data:
- Bend Radius:
  - 3.24" (Training)
  - 4.86" (Pulling)
- Cable Area: .129 in^2
- Braid strength: 160 lbs

Electrical Characteristics:
- Impedance: 50 ohms
- Capacitance: 31.8 pF/ft
- Velocity of Propagation: 64%
- DC Loop Resistance: 3.13 ohms/1000 ft
- Insulation Resistance: 26,000 megohms–1000ft
- Maximum Operating Voltage: 3,700 volts, RMS
- Dielectric Strength: 10,000 volts, RMS

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

Other:
- Quality Assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI 45.2
- ASME NQA-1
- NIAC
- NUPIC

Brand Rex BRAND

General Cable

Phone: (800) 237-6419
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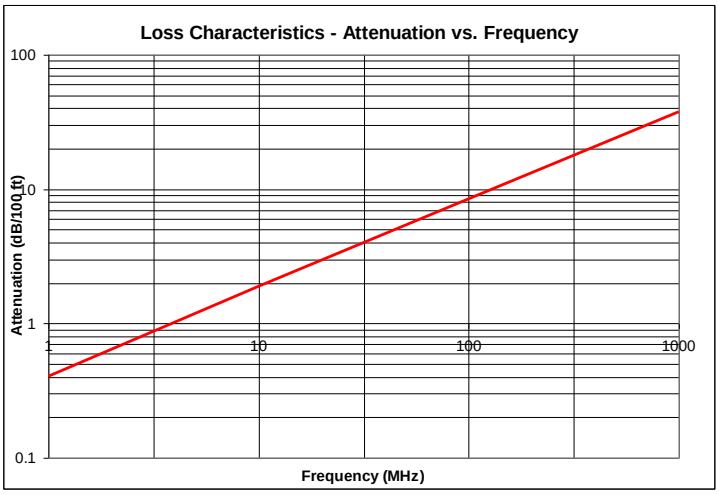
Ultrol® 75 Ohm Coax, Class 1E Nuclear

RG-59B/U Equivalent, CS75146



Product Construction:

Conductor:
- 24 AWG 16/36 tinned copper
- O.D.: .023" nom.

Insulation:
- Flame Retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .062" nom.
- O.D.: .148" nom.

Shield:
- 34 AWG tinned copper braid, 95% min. coverage

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) – Black
- Wall: .033" nom.
- O.D.: .242" ± .005"

Print:
- GENERAL CABLE® BRAND REX BRAND (WC) CS75146 COAXIAL RG-59B/U TYPE PLUS DAY/MONTH/YEAR OF MANUFACTURE UNIQUE SERIAL NUMBER SEQUENTIAL FOOTAGE MARK

Feature:
- Meets cold bend test at -40°C

Cable weight:
- 38.2 lbs/1000 ft

Catalog Number:
- Brand-Rex: CS75146
- General Cable: 204200

Options:
- Armor – braid or interlocked armor
- Flame Retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene jacket

Mechanical Data:
- Bend Radius:
  - 1.94" (Training)
  - 2.90" (Pulling)
- Cable Area: .046 in^2
- Braid strength: 70 lbs

Electrical Characteristics:
- Impedance: 75 ohms
- Capacitance: 21.2 pF/ft
- Velocity of Propagation: 64%
- DC Loop Resistance: 31.04 ohms/1000 ft
- Insulation Resistance: 40,000 megohms–1000ft
- Maximum Operating Voltage: 2,200 volts, RMS
- Dielectric Strength: 7,000 volts, RMS

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

Other:
- Quality Assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI 45.2
- ASME NQA-1
- NIAC
- NUPIC

General Cable
Phone: (800) 237-6419
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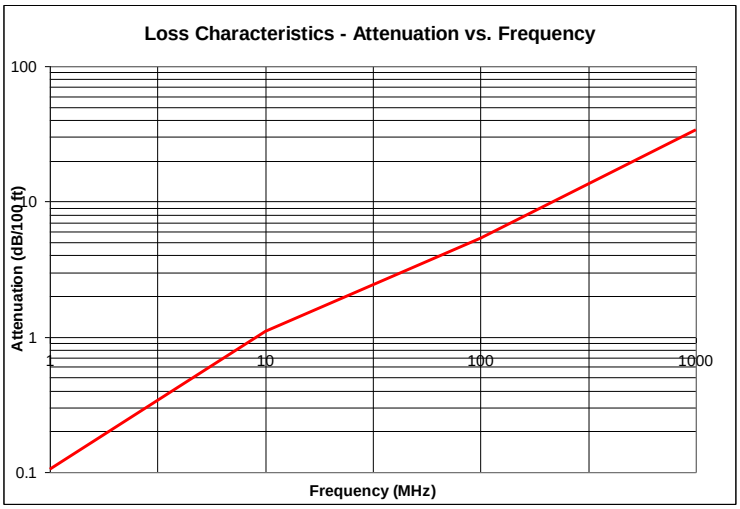
Brand Rex
BRAND

Ultrol® 75 Ohm Coax, Class 1E Nuclear

RG-11A/U Equivalent, CS75285



Product Construction:

Conductor:
- 19 AWG (7/27) tinned copper
- O.D.: .043" nom.

Insulation:
- Flame Retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .121" nom.
- O.D.: .285" nom.

Shield:
- 33 AWG tinned copper braid, 95% min. coverage

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) – Black
- Wall: .045" nom.
- O.D.: .405" ± .007"

Print:
- GENERAL CABLE® BRAND REX BRAND (WC) CS75285 COAXIAL RG-11A/U TYPE PLUS DAY/MONTH/YEAR OF MANUFACTURE UNIQUE SERIAL NUMBER SEQUENTIAL FOOTAGE MARK

Feature:
- Meets cold bend test at -40°C

Cable weight:
- 95.2 lbs/1000 ft

Catalog Number:
- Brand-Rex: CS75285
- General Cable: 204190

Options:
- Armor – braid or interlocked armor
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene jacket

Mechanical Data:
- Bend Radius:
  - 3.24" (Training)
  - 4.86" (Pulling)
- Cable Area: .129 in^2
- Braid strength: 160 lbs

Electrical Characteristics:
- Impedance: 75 ohms
- Capacitance: 21.2 pF/ft
- Velocity of Propagation: 64%
- DC Loop Resistance: 7.35 ohms/1000 ft
- Insulation Resistance: 40,000 megohms–1000ft
- Maximum Operating Voltage: 4,000 volts, RMS
- Dielectric Strength: 10,000 volts, RMS

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

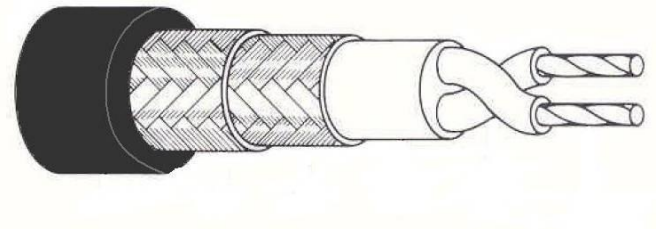
Other:
- Quality Assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI 45.2
- ASME NQA-1
- NIAC
- NUPIC

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 18712 or 18726
www.generalcable.com

Ultrol® 89 Ohm Twin Coax, Class 1E Nuclear

RG-22B/U Equivalent, TCD95285



Product Construction:

Conductor:
- 18 AWG (16/30) tinned copper
- O.D.: .046" nom.

Conductor Insulation:
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .022" nom.
- O.D.: .092" nom.

Insulation:
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .050" nom.
- O.D.: .285" nom

Inner Shield:
- 34 AWG tinned copper braid, 95% min. coverage

Inner Shield:
- 34 AWG tinned copper braid, 95% min. coverage

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) – Black
- Wall: .040" nom.
- O.D.: .420" ± .010"

Print:
- GENERAL CABLE® BRAND REX BRAND (WC) TCD95285 TWIN COAXIAL RG-22B/U TYPE PLUS DAY/MONTH/YEAR OF MANUFACTURE UNIQUE SERIAL NUMBER SEQUENTIAL FOOTAGE MARK

Feature:
- Meets cold bend test at -40°C

Cable weight:
- 124.7 lbs/1000 ft

Catalog Number:
- Brand-Rex: TCD95285
- General Cable: 203250

Options:
- Armor – braid or interlocked armor
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene jacket

Mechanical Data:
- Bend Radius:
  - 3.36" (Training)
  - 5.04" (Pulling)
- Cable Area: .139 in^2

Electrical Characteristics:
- Impedance: 89 ohms
- Capacitance: 17.8 pF/ft
- Velocity of Propagation: 64%
- DC Loop Resistance: 13.3 ohms/1000 ft
- Insulation Resistance: 15,000 megohms–1000ft
- Maximum Operating Voltage: 2,000 volts, RMS
- Dielectric Strength: 2,000 volts, RMS

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

Other:
- Quality Assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI 45.2
- ASME NQA-1
- NIAC
- NUPIC

Brand Rex BRAND

General Cable
Phone: (800) 237-6419
Ext. 8712 or 8726
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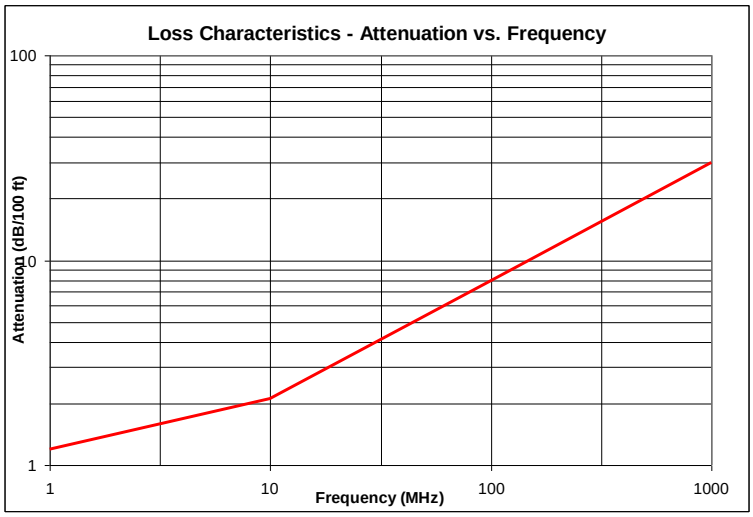
Ultrol® 95 Ohm Coax, Class 1E Nuclear

RG-62B/U Equivalent, CS95146



Product Construction:

Conductor:
- 28 AWG copper-covered steel
- O.D.: .0126" nom.

Insulation:
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .064" nom.
- O.D.: .140" nom.

Shield:
- 34 AWG tinned copper braid, 95% min. coverage

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) – Black
- Wall: .037" nom.
- O.D.: .242" ± .005"

Print:
- GENERAL CABLE® BRAND REX BRAND (WC) CS95146 COAXIAL RG-62B/U TYPE PLUS DAY/MONTH/YEAR OF MANUFACTURE UNIQUE SERIAL NUMBER SEQUENTIAL FOOTAGE MARK

Feature:
- Meets cold bend test at -40°C

Cable Weight:
- 38.8 lbs/1000 ft

Catalog Number:
- Brand-Rex: CS95146
- General Cable: 204210

Options:
- Armor – braid or interlocked armor
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene jacket

Mechanical Data:
- Bend Radius:
  - 1.94" (Training)
  - 2.90" (Pulling)
- Cable Area: .046 in^2
- Braid strength: 70 lbs

Electrical Characteristics:
- Impedance: 95 ohms
- Capacitance: 16.7 pF/ft
- Velocity of Propagation: 64%
- DC Loop Resistance: 169.6 ohms/1000 ft
- Insulation Resistance: 52,000 megohms–1000ft
- Maximum Operating Voltage: 2,000 volts, RMS
- Dielectric Strength: 7,500 volts, RMS

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

Other:
- Quality Assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI 45.2
- ASME NQA-1
- NIAC
- NUPIC

Brand Rex BRAND

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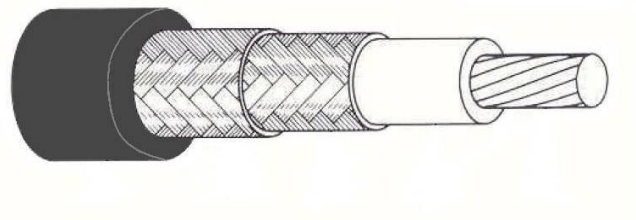
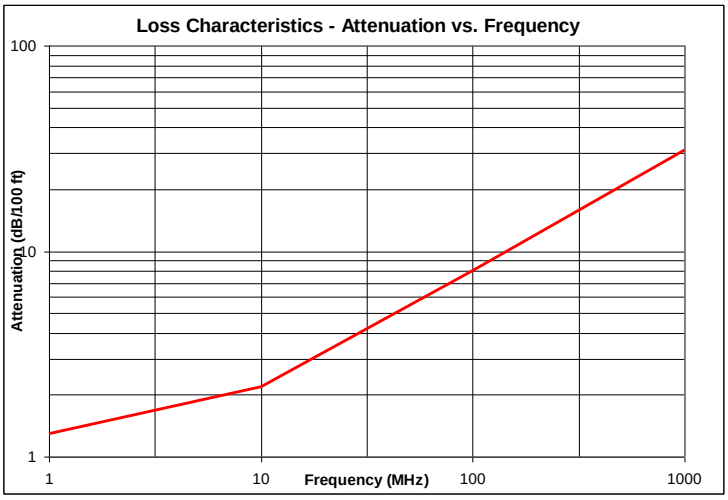
Ultrol® 95 Ohm Coax, Class 1E Nuclear

RG-71B/U Equivalent, CD95146





Product Construction:

Conductor:
- 28 AWG copper-covered steel
- O.D.: .0126" nom.

Insulation:
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .064" nom.
- O.D.: .140" nom.

Inner Shield:
- 34 AWG tinned copper braid, 95% min. coverage

Inner Shield:
- 34 AWG tinned copper braid, 95% min. coverage

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) – Black
- Wall: .026" nom.
- O.D.: .250" ± .005"

Print:
- GENERAL CABLE® BRAND REX BRAND (WC) CD95146 COAXIAL RG-71B/U TYPE PLUS DAY/MONTH/YEAR OF MANUFACTURE UNIQUE SERIAL NUMBER SEQUENTIAL FOOTAGE MARK

Feature:
- Meets cold bend test at -40°C

Cable Weight:
- 53.4 lbs/1000 ft

Catalog Number:
- Brand-Rex: CD95146
- General Cable: 204300

Options:
- Armor – braid or interlocked armor
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene jacket

Mechanical Data:
- Bend Radius:
  - 2.0" (Training)
  - 3.0" (Pulling)
- Cable Area: .049 in^2
- Braid strength: 140 lbs

Electrical Characteristics:
- Impedance: 95 ohms
- Capacitance: 16.7 pF/ft
- Velocity of Propagation: 64%
- DC Loop Resistance: 168.2 ohms/1000 ft
- Insulation Resistance: 52,000 megohms–1000ft
- Maximum Operating Voltage: 2,000 volts, RMS
- Dielectric Strength: 7,500 volts, RMS

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

Other:
- Quality Assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI 45.2
- ASME NQA-1
- NIAC
- NUPIC

Brand Rex BRAND

General Cable
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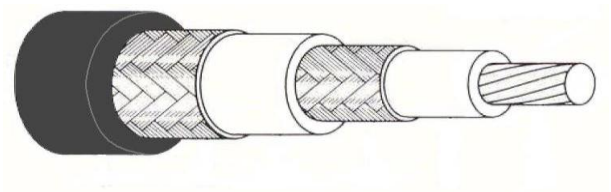
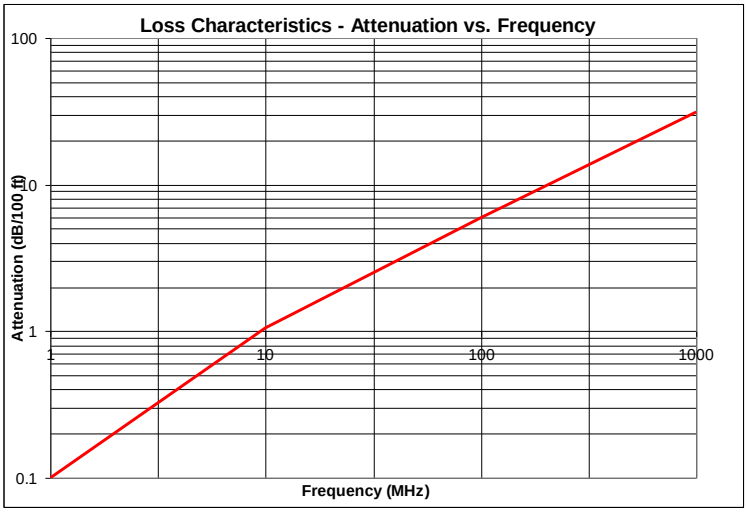
www.generalcable.com

Ultrol® 75 Ohm Coax, Class 1E Nuclear

RG-11A/U Equivalent, TS75285





Product Construction:

Conductor:
- 19 AWG (7/27) tinned copper
- O.D.: .043" nom.

Insulation:
- Flame Retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .121" nom.—O.D.: .285" nom.

Inner Shield:
- 33 AWG tinned copper braid, 95% min. coverage

Intershield Insulation:
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene
- Wall: .025" nom.—O.D.: .365" nom.

Outer Shield:
- 33 AWG tinned copper braid, 95% min. coverage

Jacket:
- Heavy-duty Chlorosulphonated Polyethylene (CSPE) – Black
- Wall: .042" nom.—O.D.: .465" ± .010"

Print:
- GENERAL CABLE® BRAND REX BRAND (WC) TS75285 TRIAXIAL RG-11A/U TYPE PLUS DAY/MONTH/YEAR OF MANUFACTURE UNIQUE SERIAL NUMBER SEQUENTIAL FOOTAGE MARK

Feature:
- Meets cold bend test at -40°C

Cable weight:
- 164.5 lbs/1000 ft

Catalog Number:
- Brand-Rex: TS75285
- General Cable: 204250

Options:
- Armor – braid or interlocked armor
- Flame retardant, heat, moisture and radiation resistant, thermoset Ultrol® Cross-linked Polyethylene jacket

Mechanical Data:
- Bend Radius:
  - 3.72" (Training)
  - 5.58" (Pulling)
- Cable Area: .181 in^2
- Braid strength: 160 lbs

Electrical Characteristics:
- Impedance: 75 ohms
- Capacitance: 21.2 pF/ft
- Velocity of Propagation: 64%
- DC Loop Resistance: 8.83 ohms/1000 ft
- Insulation Resistance: 40,000 megohms–1000ft
- Maximum Operating Voltage: 4,000 volts, RMS
- Dielectric Strength: 10,000 volts, RMS

Industry Compliances:
- Class 1E Qualified in accordance with IEEE 323-1974 and IEEE 383-1974
- ICEA S-73-532

Other:
- Quality Assurance program in accordance with NRC 10CFR50 Appendix B
- ANSI 45.2
- ASME NQA-1
- NIAC
- NUPIC

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ULTROL® Nuclear Cables Catalog

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ULTROL®… Still Ahead of Its Time After 35 Years
Class 1E Nuclear Rated Cables

Approvals and Certifications

General Cable's Ultrol® products have demonstrated their ability to deliver 40 years of reliable service by passing the stringent Loss of Coolant Accident (LOCA) and Steam Line Break (SLB) tests as well as postulated Design Basis Event (DBE) testing. All of General Cable's nuclear-rated 1E products meet IEEE 323-1974 and IEEE 383-1974 requirements.

Compliance Standards
• ANSI • ICEA • IEEE
Franklin Qualification Reports
• F-C5120-1 – 300 V & 600 V Constructions • F-C5120-2 – Coaxial / Triaxial Constructions • F-C5120-3 – All Constructions, 150 Day Total Testing Period • F-C5120-4 – 300 V Constructions

Every Ultrol cable is manufactured in conformance with the documented General Cable Quality Assurance program for Nuclear Facilities and Quality Control procedures, all under our ISO 9001:2008, ASME NQA-1:1994 and ASME NQA-1:2008 (and 2009 Supplemental) commitment-to-quality organization. General Cable's facility has maintained its nuclear status through regular audits by industry committees such as the Nuclear Procurement Issues Committee and several other quality assurance organizations.

Quality Assurance
• International Standards Organization – ISO 9001:2008 • American National Standards Institute – ANSI N45.2 • American Society of Mechanical Engineers – ASME NQA-1:1994 and ASME NQA-1:2008 (and 2009 Supplemental) Nuclear Regulatory Commission – NRC 10 CFR 50 Appendix B • Nuclear Regulatory Commission – NRC 10 CFR 50 Appendix B • Nuclear Procurement Issues Committee (NUPIC) • Nuclear Industry Assessment Committee (NIAC)

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ULTROL® Class 1E Nuclear Rated Cables

Nuclear Procurement Issues Committee (NUPIC)

Since March of 1993, the Willimantic, CT facility has maintained compliance with the standards set by the Nuclear Procurement Issues Committee (NUPIC). Every thirty months a team of five (Utility lead auditors and technical specialist) evaluate our Quality System and manufacturing operation's ability to successfully supply Class 1E instrumentation, power and control wire and cable for the nuclear industry. The audit scope includes ASME NQA-1:2008 and 2009 supplemental, 10 CFR 50 Appendix "B", 10 CFR 21. Last audit: June, 2010.

Nuclear Industry Assessment Committee (NIAC)

General Cable, Willimantic, maintains compliance with the standards set by the Nuclear Industry Assessment Committee (NIAC). NIAC conducts an assessment every three years. Their assessment has verified our compliance with our own Quality Policy and procedures as well as compliance with 10 CFR 50 Appendix "B", 10 CFR 21, ASME NQA-1 and ANSI N45.2. Last audit: June, 2009.

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Class 1E Nuclear Grade Cables and Qualification Report Identification

Cable Type	Qualification Report No.	Construction	
Power & Control	Franklin Report C5120-1 (08/19/80)	1/C #16 1/C #12 1/C #02 2/C #16 7/C #12	FR-XLPE FR-XLPE FR-XLPE FR-XLPE/Hypalon® FR-XLPE/Hypalon®
Power & Control	Franklin Report with Supplement (01/08/81)	1/C #16 1/C #12 1/C #02 2/C #16 7/C #12	FR-XLPE FR-XLPE FR-XLPE FR-XLPE/Hypalon® FR-XLPE/Hypalon®
Coaxial and Triaxial	Franklin Report C5120-2 (09/02/80)	CS75285 (RG-11A/U) CS75146 (RG-59B/U)	FR-XLPE/Hypalon® FR-XLPE/Hypalon®
Power & Control Instrumentation Coaxial and Triaxial	Franklin Report C5120-3 (11/18/81)	1/C #16 1/C #12 1/C #02 CS75146 (RG-59B/U)	FR-XLPE FR-XLPE FR-XLPE FR-XLPE/Hypalon®
Instrumentation	Franklin Report C5120-4 (01/11/82)	1PR/#16	FR-XLPE/Hypalon®

ULTROL® Nuclear Cables Catalog

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4. Technical Information

Common Color Sequence

Method 1 - Table E1 Color Sequence

CONDUCTOR NUMBER	BACKGROUND OR BASE COLOR	FIRST TRACER COLOR	SECOND TRACER COLOR	CONDUCTOR NUMBER	BACKGROUND OR BASE COLOR	FIRST TRACER COLOR	SECOND TRACER COLOR
1	Black	-	-	20	Red	Green	-
2	White	-	-	21	Orange	Green	-
3	Red	-	-	22	Black	White	Red
4	Green	-	-	23	White	Black	Red
5	Orange	-	-	24	Red	Black	White
6	Blue	-	-	25	Green	Black	White
7	White	Black	-	26	Orange	Black	White
8	Red	Black	-	27	Blue	Black	White
9	Green	Black	-	28	Black	Red	Green
10	Orange	Black	-	29	White	Red	Green
11	Blue	Black	-	30	Red	Black	Green
12	Black	White	-	31	Green	Black	Orange
13	Red	White	-	32	Orange	Black	Green
14	Green	White	-	33	Blue	White	Orange
15	Blue	White	-	34	Black	White	Orange
16	Black	Red	-	35	White	Red	Orange
17	White	Red	-	36	Orange	White	Blue
18	Orange	Red	-	37	White	Red	Blue
19	Blue	Red	-				

Pair cables are Black, White and numbered. Triad cables are Black, White, Red and numbered.

Method 1 - Table E2 Color Sequence

CONDUCTOR NUMBER	BACKGROUND OR BASE COLOR	TRACER COLOR	CONDUCTOR NUMBER	BACKGROUND OR BASE COLOR	TRACER COLOR
1	Black	-	19	Orange	Blue
2	Red	-	20	Yellow	Blue
3	Blue	-	21	Brown	Blue
4	Orange	-	22	Black	Orange
5	Yellow	-	23	Red	Orange
6	Brown	-	24	Blue	Orange
7	Red	Black	25	Yellow	Orange
8	Blue	Black	26	Brown	Orange
9	Orange	Black	27	Black	Yellow
10	Yellow	Black	28	Red	Yellow
11	Brown	Black	29	Blue	Yellow
12	Black	Red	30	Orange	Yellow
13	Blue	Red	31	Brown	Yellow
14	Orange	Red	32	Black	Brown
15	Yellow	Red	33	Red	Brown
16	Brown	Red	34	Blue	Brown
17	Black	Blue	35	Orange	Brown
18	Red	Blue	36	Yellow	Brown

Pair cables are Black, Red and numbered. Triad cables are Black, Red, Blue and numbered. Colors repeat after 36 conductors. There are no Green or White conductors or stripes.

Method 3 - Table E1 Color Sequence

CONDUCTOR NUMBER	CONDUCTOR PRINTING
1	“1-Black”
2	“2-White”
3	“3-Red”
4	“4-Green”

Method 3 - Table E2 Color Sequence

CONDUCTOR NUMBER	CONDUCTOR PRINTING
1	“1-Black”
2	“2-Red”
3	“3-Blue”
4	“4-Orange”

Method 4 - All Conductors Black

CONDUCTOR NUMBER	CONDUCTOR PRINTING
1	“1-One”
2	“2-Two”
3	“3-Three”
4	“4-Four”
5	“5-Five”

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Temperature Conversion Table

Read known temperature in bold face type. Corresponding temperature in degrees Fahrenheit will be found in column to the right. Corresponding temperature in degrees Centigrade will be found in column to the left.

-5 to -100			0 TO 100						100 TO 500		
°C		°F	°C		°F	°C		°F	°C		°F
-73.3	**-100**	-148	-17.8	**0**	32.0	10.0	**50**	122.0	38	**100**	212
-70.5	**- 95**	-139	-17.2	**1**	33.8	10.6	**51**	123.8	43	**110**	230
-67.8	**- 90**	-130	-16.7	**2**	35.6	11.1	**52**	125.6	49	**120**	248
-65.0	**- 85**	-121	-16.1	**3**	37.4	11.7	**53**	127.4	54	**130**	266
-62.2	**- 80**	-112	-15.6	**4**	39.2	12.2	**54**	129.2	60	**140**	284
-59.5	**- 75**	-103	-15.0	**5**	41.0	12.8	**55**	131.0	66	**150**	302
-56.7	**- 70**	- 94	-14.4	**6**	42.8	13.3	**56**	132.8	71	**160**	320
-53.9	**- 65**	- 85	-13.9	**7**	44.6	13.9	**57**	134.6	77	**170**	338
-51.1	**- 60**	- 76	-13.3	**8**	46.4	14.4	**58**	136.4	82	**180**	356
-48.3	**- 55**	- 67	-12.8	**9**	48.2	15.0	**59**	138.2	88	**190**	374
-45.6	**- 50**	- 58	-12.2	**10**	50.0	15.6	**60**	140.0	93	**200**	392
-42.8	**- 45**	- 49	-11.7	**11**	51.8	16.1	**61**	141.8	99	**210**	410
-40.0	**- 40**	- 40	-11.1	**12**	53.6	16.7	**62**	143.6	100	**212**	413
-37.2	**- 35**	- 31	-10.6	**13**	55.4	17.2	**63**	145.4	104	**220**	428
-34.4	**- 30**	- 22	-10.0	**14**	57.2	17.8	**64**	147.2	110	**230**	446
-31.6	**- 25**	- 13	-9.44	**15**	59.0	18.3	**65**	149.0	116	**240**	464
-28.9	**- 20**	- 4	-8.89	**16**	60.8	18.9	**66**	150.8	121	**250**	482
-26.1	**- 15**	5	-8.33	**17**	62.6	19.4	**67**	152.6	127	**260**	500
-23.3	**- 10**	14	-7.78	**18**	64.4	20.0	**68**	154.4	132	**270**	518
-20.5	**- 5**	23	-7.22	**19**	66.2	20.6	**69**	156.2	138	**280**	536
			-6.67	**20**	68.0	21.1	**70**	158.0	143	**290**	554
			-6.11	**21**	69.8	21.7	**71**	159.8	149	**300**	572
			-5.56	**22**	71.6	22.2	**72**	161.6	154	**310**	590
			-5.00	**23**	73.4	22.8	**73**	163.4	160	**320**	608
			-4.44	**24**	75.2	23.3	**74**	165.2	166	**330**	626
			-3.89	**25**	77.0	23.9	**75**	167.0	171	**340**	644
			-3.33	**26**	78.8	24.4	**76**	168.8	177	**350**	662
			-2.78	**27**	80.6	25.0	**77**	170.6	182	**360**	680
			-2.22	**28**	82.4	25.6	**78**	172.4	188	**370**	698
			-1.67	**29**	84.2	26.1	**79**	174.2	193	**380**	716
			-1.11	**30**	86.0	26.7	**80**	176.0	199	**390**	734
			-0.56	**31**	87.8	27.2	**81**	177.8	204	**400**	752
			0	**32**	89.6	27.8	**82**	179.6	210	**410**	770
			0.56	**33**	91.4	28.3	**83**	181.4	216	**420**	788
			1.11	**34**	93.2	28.9	**84**	183.2	221	**430**	806
			1.67	**35**	95.0	29.4	**85**	185.0	227	**440**	824
			2.22	**36**	96.8	30.0	**86**	186.8	232	**450**	842
			2.78	**37**	98.6	30.6	**87**	188.6	238	**460**	860
			3.33	**38**	100.4	31.1	**88**	190.4	243	**470**	878
			3.89	**39**	102.2	31.7	**89**	192.2	249	**480**	896
			4.44	**40**	104.0	32.2	**90**	194.0	254	**490**	914
			5.00	**41**	105.8	32.8	**91**	195.8	260	**500**	932
			5.56	**42**	107.6	33.3	**92**	197.6			
			6.11	**43**	109.4	33.9	**93**	199.4			
			6.67	**44**	111.2	34.4	**94**	201.2			
			7.22	**45**	113.0	35.0	**95**	203.0			
			7.78	**46**	114.8	35.6	**96**	204.8			
			8.33	**47**	116.6	36.1	**97**	206.6			
			8.89	**48**	118.4	36.7	**98**	208.4			
			9.44	**49**	120.2	37.2	**99**	210.2			
						37.8	**100**	212.0			

Interpolation Factors

°C		°F	°C		°F	°C		°F
0.56	1	1.8	2.22	4	7.2	3.89	7	12.6
1.11	2	3.6	2.78	5	9.0	4.44	8	14.4
1.67	3	5.4	3.33	6	10.8	5.00	9	16.2

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Metric Conversion Factors

	To Convert From	To	Multiply By
Length	Inches	Millimeters	25.4
	Millimeters	Inches	0.03937
	Inches	Centimeters	2.54
	Centimeters	Inches	0.3937
	Feet	Meters	0.3048
	Meters	Feet	3.2808
	kilofeet (1000 ft)	kilometers	0.3048
	kilometers	kilofeet (1000 ft)	3.2808
Area	Square Inches	Square Millimeters	645.16
	Square Millimeters	Square Inches	0.00155
	Square Inches	Square Centimeters	6.4516
	Square Centimeters	Square Inches	0.155
	Square Inches	Circular Mils	1,273,240
	Circular Mils	Square Inches	7.854×10^{-7}
	Circular Mils	Square Millimeters	5.066×10^{4}
	Square Millimeters	Circular Mils	1973.51
	Square Feet	Square Meters	0.0929
	Square Meters	Square Feet	10.764
Weight	Pounds	Kilograms	0.4536
	Kilograms	Pounds	2.2046
	Pound/Kilofeet	Kilograms/Kilometer	1.4882
	Kilograms/Kilometer	Pounds/Kilofeet	0.6720
Electrical	Ohms/Kilofeet	Ohms/Kilometer	3.2808
	Ohms/Kilometer	Ohms/Kilofeet	0.3048
	Microfarads/Kilofeet	Microfarads/Kilometer	3.2808
	Microfarads/Kilometer	Microfarads/Kilofeet	0.3048
	Insulation Resistance:		
	Megohms—Kilofeet	Megohms—Kilometer	0.3048
	Megohms—Kilometer	Megohms—Kilofeet	3.2808
Mechanical	Pounds/Square Inch	Kilo Pascal*	6.895
	Kilo Pascal*	Pounds/Square Inch	0.1432
	Pounds (force)	Newtons	4.448

* 1 Pascal = 1 newton/m^2

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Class B Conductors for General Wiring

Copper Conductor

ASTM CLASS B

COND. SIZE	STRANDING	NOMINAL AREA		NOMINAL WEIGHT		CONCENTRIC NOMINAL O.D.		COMPRESSED NOMINAL O.D.		COMPACT NOMINAL O.D.	
AWG/kcmil	INCHES	CIRCULAR MILS	mm²	LBS/1000 FT[1]	kg/km	INCHES	mm	INCHES	mm	INCHES	mm
22	7/.0096	640	0.32	1.99	2.96	0.029	0.74	—	—	—	—
20	7/.0121	1,020	0.52	3.15	4.69	0.036	0.91	—	—	—	—
18	7/.0152	1,620	0.82	5.10	7.59	0.046	1.17	—	—	—	—
16	7/.0192	2,580	1.31	7.74	11.52	0.058	1.47	—	—	—	—
14	7/.0242	4,110	2.08	12.70	18.90	0.073	1.84	0.071	1.80	—	—
12	7/.0305	6,530	3.31	20.20	30.10	0.092	2.32	0.089	2.26	—	—
10	7/.0385	10,380	5.26	32.10	47.80	0.116	2.95	0.113	2.87	—	—
8	7/.0486	16,510	8.36	51	75.90	0.146	3.71	0.142	3.60	0.134	3.40
6	7/.0612	26,240	13.30	81.10	120.70	0.184	4.67	0.178	4.53	0.169	4.29
4	7/.0772	41,740	21.20	129	192	0.232	5.89	0.225	5.72	0.213	5.41
2	7/.0974	66,360	33.60	205	305.10	0.292	7.42	0.283	7.19	0.268	6.81
1	19/.0664	83,690	42.40	258	383.90	0.332	8.43	0.322	8.18	0.299	7.59
1/0	19/.0745	105,600	53.50	326	485.10	0.373	9.47	0.362	9.19	0.336	8.53
2/0	19/.0837	133,100	67.40	411	611.60	0.419	10.64	0.406	10.32	0.376	9.55
3/0	19/.0940	167,800	85	518	770.90	0.470	11.94	0.456	11.58	0.423	10.74
4/0	19/.1055	211,600	107	653	971.80	0.528	13.41	0.512	13.01	0.475	12.07
250	37/.0822	250,000	127	772	1148.90	0.575	14.61	0.558	14.17	0.520	13.21
300	37/.0900	300,000	152	926	1378	0.630	16.00	0.611	15.52	0.570	14.48
350	37/.0973	350,000	177	1,081	1609	0.681	17.30	0.661	16.78	0.616	15.65
400	37/.1040	400,000	203	1,235	1838	0.728	18.49	0.706	17.94	0.659	16.74
500	37/.1162	500,000	253	1,544	2298	0.813	20.65	0.789	20.03	0.736	18.69
600	61/.0992	600,000	304	1,883	2802	0.893	22.68	0.866	22.00	0.813	20.65
750	61/.1109	750,000	380	2,316	3447	0.998	25.35	0.968	24.59	0.908	23.06
1000	61/.1280	1,000,000	507	3,088	4595	1.152	29.26	1.117	28.38	1.060	26.92

Dimensions and weights are nominal; subject to industry tolerances.
[1] Nominal conductor weights are applicable for Concentric Class B and Compressed Stranding per ASTM B8.

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Class C Conductors for General Wiring

Copper Conductor

ASTM CLASS C

SIZE	STRANDING	NOMINAL AREA		NOMINAL DIAMETER		NOMINAL WEIGHT	
AWG/kcmil	INCHES	CIRCULAR MILS	mm^2	INCHES	mm	LBS/KFT	kg/km
22	19/.0063	640	0.32	0.031	0.79	2.34	3.48
20	19/.0080	1,020	0.52	0.038	0.97	3.71	5.52
18	19/.0092	1,620	0.82	0.044	1.12	5.00	7.40
16	19/.0117	2,580	1.31	0.056	1.42	7.97	11.86
14	19/.0147	4,110	2.08	0.070	1.80	12.70	18.90
12	19/.0185	6,530	3.31	0.089	2.24	20.20	30.10
10	19/.0234	10,380	5.26	0.112	2.85	32.05	47.80
9	19/.0262	13,090	6.63	0.126	3.20	40.40	60.10
8	19/.0295	16,510	8.37	0.143	3.63	51.00	74.40
7	19/.0331	20,820	10.50	0.162	4.11	64.30	95.70
6	19/.0372	26,240	13.30	0.184	4.67	81.00	121
5	19/.0417	33,090	16.80	0.203	5.16	102	152
4	19/.0469	41,740	21.20	0.235	5.97	129	192
3	19/.0526	52,620	26.70	0.263	6.68	163	243
2	19/.0591	66,360	33.60	0.296	7.52	205	305
1	37/.0476	83,690	42.40	0.323	8.20	258	384
1/0	37/.0534	105,600	53.50	0.362	9.20	326	485
2/0	37/.0600	133,100	67.40	0.407	10.33	411	612
3/0	37/.0673	167,800	85	0.457	11.60	518	771
4/0	37/.0756	211,600	107	0.513	13.03	653	972
250	31/.0640	250,000	127	0.558	14.17	774	1150
262.6	—	—	—	—	—	—	—
300	61/.0701	300,000	152	0.612	15.54	927	1380
313.1	—	—	—	—	—	—	—
350	61/.0757	350,000	177	0.661	16.79	1082	1610
373.7	—	—	—	—	—	—	—
400	61/.0810	400,000	203	0.711	18.10	1235	1838
444.4	—	—	—	—	—	—	—
500	61/.0905	500,000	253	0.791	20.10	1545	2299
535.3	—	—	—	—	—	—	—
592	—	—	—	—	—	—	—
600	91/.0812	600,000	304	0.893	22.70	1853	2757
646.4	—	—	—	—	—	—	—
750	91/.0908	750,000	380	0.999	25.40	2316	3446
777.7	—	—	—	—	—	—	—
1000	91/.1048	1,000,000	507	1.153	29.30	3088	4595
1111	—	—	—	—	—	—	—

Dimensions and weights are nominal; subject to industry tolerances.

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Class H Conductors for General Wiring

Copper Conductor

ASTM CLASS H

SIZE	STRANDING	NOMINAL AREA		NOMINAL DIAMETER		NOMINAL WEIGHT	
AWG/kcmil	INCHES	CIRCULAR MILS	mm^2	INCHES	mm	LBS/KFT	kg/km
9	—	—	—	—	—	—	—
8	133/.0111	16,510	8.37	0.164	4.17	52	77
7	133/.0126	20,820	10.50	0.190	4.83	67	100
6	133/.0140	26,240	13.30	0.204	5.18	82	122
5	133/.0158	33,090	16.80	0.231	5.87	105	156
4	133/.0177	41,740	21.20	0.260	6.60	132	196
3	133/.0199	52,620	26.70	0.292	7.42	167	248
2	133/.0223	66,360	33.60	0.327	8.31	208	310
1	259/.0180	83,690	42.40	0.363	9.22	266	396
1/0	259/.0202	105,600	53.50	0.407	10.30	334	497
2/0	259/.0227	133,100	67.40	0.458	11.60	422	628
3/0	259/.0255	167,800	85	0.515	13.10	533	793
4/0	259/.0286	211,600	107	0.579	14.70	670	997
250	427/.0242	250,000	127	0.627	15.90	795	1183
262.6	—	—	—	—	—	—	—
300	427/.0265	300,000	152	0.702	17.80	953	1418
313.1	—	—	—	—	—	—	—
350	427/.0286	350,000	177	0.740	18.80	1110	1652
373.7	—	—	—	—	—	—	—
400	427/.0306	400,000	203	0.809	20.50	1270	1890
444.4	—	—	—	—	—	—	—
500	427/.0342	500,000	253	0.900	22.90	1590	2366
535.3	—	—	—	—	—	—	—
592	—	—	—	—	—	—	—
600	703/.0292	600,000	304	1.022	26.00	1920	2857
646.4	—	—	—	—	—	—	—
750	703/.0327	750,000	380	1.122	28.50	2410	3586
777.7	—	—	—	—	—	—	—
1000	703/.0377	1,000,000	507	1.294	32.90	3205	4769
1111	—	—	—	—	—	—	—

Dimensions and weights are nominal; subject to industry tolerances.

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Class I Conductors for General Wiring

Copper Conductor

ASTM CLASS I

SIZE	STRANDING	NOMINAL AREA		NOMINAL DIAMETER		NOMINAL WEIGHT	
AWG/kcmil	INCHES	CIRCULAR MILS	mm^2	INCHES	mm	LBS/KFT	kg/km
10	27/.0201	10,910	5.53	0.117	2.97	33.70	50
9	—	—	—	—	—	—	—
8	37/.0201	14,950	7.57	0.135	3.43	46	68
7	—	—	—	—	—	—	—
6	61/.0201	24,640	12.50	0.174	4.42	77	114
5	91/.0201	36,760	19	0.242	6.15	116	173
4	105/.0201	42,420	21	0.262	6.60	137	204
3	126/.0201	50,500	25	0.285	7.24	167	249
2	147/.0201	60,600	31	0.307	7.80	190	283
1	224/.0201	90,900	46	0.380	9.65	287	427
1/0	273/.0201	111,100	56	0.410	10.41	351	522
2/0	323/.0201	131,300	66	0.470	11.90	407	606
3/0	456/.0201	184,200	92	0.549	13.94	594	884
4/0	551/.0201	222,600	112	0.593	14.70	696	1035
250	—	—	—	—	—	—	—
262.6	646/.0201	261,000	133	0.630	16	820	1220
300	—	—	—	—	—	—	—
313.1	777/.0201	313,900	159	0.685	17.40	987	1469
350	—	—	—	—	—	—	—
373.7	925/.0201	373,700	189	0.750	19	1176	1750
400	—	—	—	—	—	—	—
444.4	1110/.0201	448,400	225	0.820	20.80	1413	2103
500	—	—	—	—	—	—	—
535.3	1332/.0201	538,100	271	0.895	22.70	1697	2525
592	1480/.0201	597,900	303	0.972	24.70	1858	2765
600	—	—	—	—	—	—	—
646.4	1591/.0201	642,800	327	0.980	24.90	2020	3006
750	—	—	—	—	—	—	—
777.7	1924/.0201	777,700	394	1.075	27.30	2435	3624
1000	—	—	—	—	—	—	—
1111	2745/.0201	1,111,000	563	1.328	33.70	3400	5059

Dimensions and weights are nominal; subject to industry tolerances.

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Class K Conductors for General Wiring

Copper Conductor

ASTM CLASS K

SIZE	STRANDING	NOMINAL AREA		NOMINAL DIAMETER		NOMINAL WEIGHT	
AWG/kcmil	INCHES	CIRCULAR MILS	mm^2	INCHES	mm	LBS/KFT	kg/km
22	—	—	—	—	—	—	—
20	10/.010	1,020	0.52	0.036	0.91	3.2	4.8
18	16/.010	1,620	0.82	0.046	1.20	5	7.4
16	26/.010	2,580	1.31	0.057	1.40	7.97	12
14	41/.010	4,110	2.08	0.071	1.80	12.8	19
12	65/.010	6,530	3.31	0.088	2.20	20.3	30.2
10	105/.010	10,380	5.26	0.112	2.80	33.3	49.6
9	133/.010	13,090	6.63	0.150	3.80	42.4	63.1
8	168/.010	16,510	8.37	0.164	4	53.2	80.8
7	210/.010	20,820	10.50	0.175	4.40	66.8	99.4
6	266/.010	26,240	13.30	0.198	5.00	84.2	125
5	336/.010	33,090	16.80	0.261	6.60	106	158
4	420/.010	41,740	21.20	0.249	6.30	132	196
3	532/.010	52,620	26.70	0.298	7.60	169	251
2	665/.010	66,360	33.60	0.317	8.10	211	314
1	836/.010	83,690	42.40	0.356	9	266	396
1/0	1064/.010	105,600	53.50	0.401	10	338	503
2/0	1323/.010	133,100	67.40	0.501	13	425	632
3/0	1666/.010	167,800	85	0.562	14	535	796
4/0	2107/.010	211,600	107	0.627	15.93	676	1006
250	2499/.010	250,000	127	0.688	17	802	1193
262.6	2220/.010	222,000	112	0.680	17	824	1226
300	2989/.010	300,000	152	0.753	19	960	1428
313.1	3136/.010	313,600	159	0.750	19	969	1442
350	3458/.010	350,000	177	0.818	21	1120	1667
373.7	3737/.010	373,700	189	0.790	20	1210	1800
400	3990/.010	400,000	203	0.878	22	1290	1920
444.4	—	—	—	—	—	—	—
500	5054/.010	500,000	253	0.990	25	1635	2433
535.3	5320/.010	532,000	270	0.950	24	1641	2442
592	—	—	—	—	—	—	—
600	5985/.010	600,000	340	1.125	29	1950	2902
646.4	6466/.010	646,600	328	1.040	26	1987	2957
750	7448/.010	750,000	380	1.276	32	2427	3611
777.7	—	—	—	—	—	—	—
1000	9975/.010	1,000,000	507	1.498	38	3250	4769
1111	—	—	—	—	—	—	—

Dimensions and weights are nominal; subject to industry tolerances.

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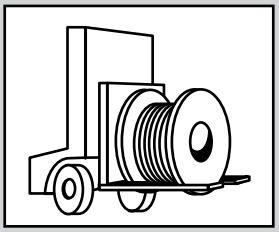
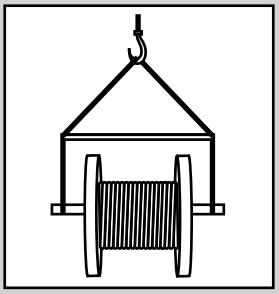
Recommended Reel Handling Practices

How to Handle Cable Reels

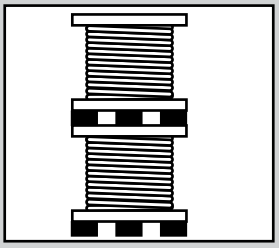
YES



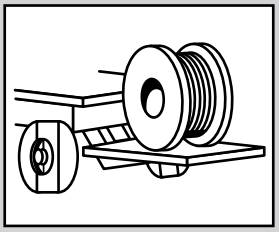
Cradle both reel flanges between forks.



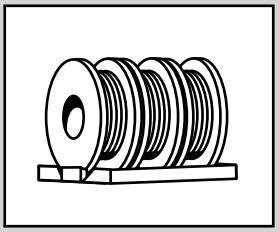
Reels can be hoisted with a shaft extended through both flanges.



Place spacers under the bottom flange and between reels to create a space to insert the forks.

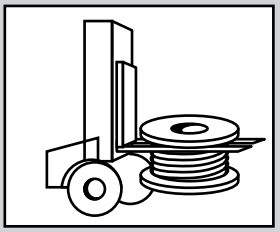


Lower reels from truck using hydraulic gate, hoist or fork lift. LOWER CAREFULLY.

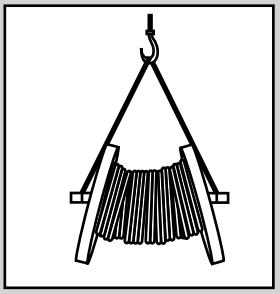


Always load with flanges on edge and chock and block securely.

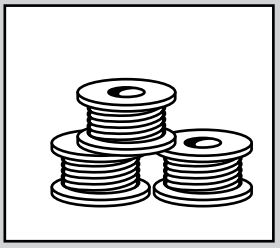
NO



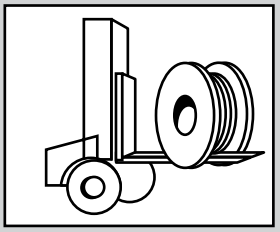
Do not lift by top flange. Cable or reel will be damaged.



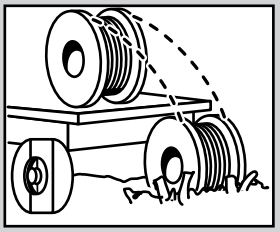
Use a spreader bar to prevent bending the reel flanges and mashing the cable.



Upended heavy reels will often arrive damaged. Refuse or receive subject to inspection for hidden damage.



Never allow forks to touch cable surface or reel wrap.



Never drop reels.

General Cable
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Recommended Cable Handling Practices

Unloading and Moving of Reels:

Cable reels are never shipped upended (flat side down). Cable reels that arrive in this manner should be rejected or received only after a thorough inspection for damage.

See “Recommended Reel Handling Practices” on the following pages.

Upon receipt, a cable’s protective covering and/or lagging should be inspected for evidence of damage during shipment. If evidence of damage is found, a report should immediately be made to the carrier.

Under no circumstances should reels be dropped from the delivering vehicle to the ground.

Unloading and reel handling should be accomplished so that the equipment used does not contact the cable surface, and in the case of protective wrap, that the equipment does not contact the protective wrap.

If unloading and reel handling is accomplished by crane, either a cradle supporting the reel flanges or a shaft through the arbor hole should be used. If a fork lift is utilized, the forks must lift the reel at 90˚ to the flanges and the forks must be long enough to make complete lifting contact with both flanges. Under no circumstances should the forks come into contact with the cable surface or the protective wraps.

When a reel of cable is rolled from one point to another, care must be taken to see that there are no objects on the surface area which could contact or damage the cable surface or protective wrap.

If an inclined ramp is used for unloading, the ramp must be wide enough to contact both flanges completely. The stopping of the reels at the bottom shall be accomplished by using the reel flanges and not the surface of the cable.

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ext. 18712 or 18726
www.generalcable.com

Recommended Cable Storage Practices

Storage and Storage Maintenance:

Finished cables have no established shelf-life. Moisture and atmospheric conditions can cause exposed conductors to oxidize and discolor. Uncovered/unsheltered cable will degrade due to exposure to direct sunlight and/or the elements. If the cables are protected, there should be no degradation of the insulation.

In general, any cable for use indoors should be stored indoors. Any cable suitable for installation outdoors is suitable for storage outdoors. Cables stored outdoors should have the ends sealed to prevent moisture ingress into the cable.

Cables should be stored in a sheltered area. While on the reel, cable should be covered with Masonite or a dark film wrap (to block the sun's rays and shield from the elements).

Cables with a cold temperature marking i.e. –10˚C, –25˚C, or –40˚C may be stored outdoors. Cables without a cold temperature marking must be stored indoors.

Cable reels must remain in the upright position. Cable reels must not be stored on their sides. Reels must not be stacked.

Cable reels should be stored with the protective covering or lagging in place. If a length of cable has been cut from the reel, the cable end should be immediately resealed to prevent the entrance of moisture. If a part length is returned to storage, the reel's protective covering should be restored.

Wooden reels should be stored off the ground to prevent rotting. Reels should be stored on a flat, hard surface so that flanges do not sink into the earth. The weight of the reel and cable must be carried at all times by the reel flanges.

Cable reels and lagging must not be stored for an extended time period sitting in direct contact with water or dampness. Timbers or metal supports must be placed under the reel flanges to provide elevated storage of the reels away from the direct contact with water or damp soil.

Reels should be stored in an area where construction equipment, falling or flying objects or other materials will not contact the cable.

Cable should be stored in an area where chemicals or petroleum products will not be spilled or sprayed on the cable.

Cable should be stored in an area away from open fires or sources of high heat.

If the reels are relocated, they should be handled as suggested in the "Recommended Reel Handling Practices" section, and inspection made on each reel during the relocation.

If the cables are stored in a secure area and not exposed to the effects of the weather, an annual inspection should be satisfactory.

Where the reels are exposed to the weather, a bimonthly inspection should be performed to observe any sign of deterioration.

If the reels are exposed in a non-secure area, policing of the area at frequent intervals may be required depending on circumstances.

Records of delivery date, manufacturer, installation date, any extenuating circumstances, along with all test reports should be kept on file.

Pre-Installation Instructions

Pre-Installation

Overview

To ensure safety during cable installation and reliability once the cable is installed, you should confirm the following prior to installation:

- The cable selected is proper for your application
- The cable has not been damaged in transit or storage

Review all applicable state and national codes to verify that the cable chosen is appropriate for the job. Also, consult your local building authority.

Next, you must identify any existing cable damage and prevent any further damage from occurring. This is done through proper cable inspection, handling and storage.

Cable Inspection

Inspect every cable reel for damage before accepting the shipment. Be particularly alert for cable damage if:

- A reel is laying flat on its side
- Several reels are stacked
- Other freight is stacked on a reel
- Nails have been driven into reel flanges to secure shipping blocks
- A reel flange is damaged
- A cable covering is removed, stained or damaged
- A cable end seal is removed or damaged
- A reel has been dropped (hidden damage likely)

Cabling Handling

Remove all nails and staples from the reel flanges before moving a reel, and avoid all objects that could crush, gouge or impact the cable when moving. NEVER use the cable as a means to move a reel.

When unreeling, observe recommended bending radii, use swivels to prevent twisting and avoid overruns.

Installation—Overview and Checklist

Installation

Overview

Most cables are subjected to more mechanical stress during installation than they ever experience in actual operation. Needless to say, handling and pulling your cable according to manufacturer's recommendations is extremely important.

There are six main considerations in any cable installation:

- Ambient temperature
- Equipment
- Conduit fill
- Mechanical fit in raceway
- Physical limitations
- Knowledgeable installers

For more information, reference IEEE 1185 Recommended Practices for Cable Installations in Generating Stations and Industrial Facilities.

Installation Temperature

Low temperatures are a cause for concern when installing cable. Cable should not be installed when temperatures are less than the cold bend temperature rating of the cable product plus 15°C (i.e., minimum installation temperature = cold bend temperature rating + 15°C). The cold bend temperature rating is indicated on the catalog Spec sheet.

Prior to performing a low temperature (less than 10°F or -12°C) cable installation, cable should be stored for a minimum of 24 hours at a temperature of 55°F (13°C) or higher.

Cable should be pulled more slowly and trained in place the same day it is removed from storage. Do not impact, drop, kink or bend cable sharply in low temperatures.

Equipment

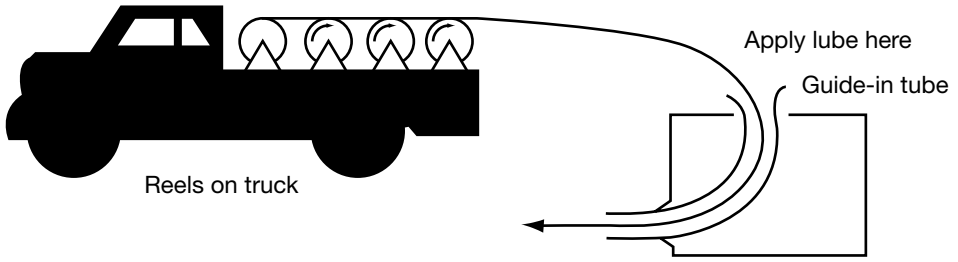
The proper use of appropriate equipment is crucial to a successful cable installation. The equipment needed for most installations is detailed in the following checklist:

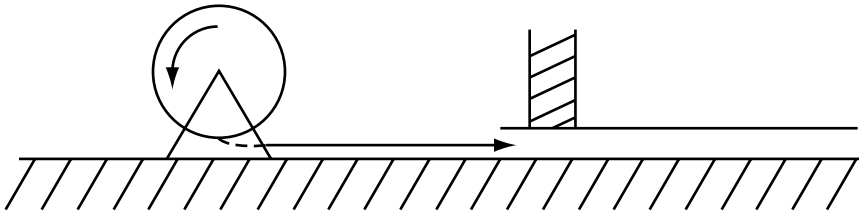
- ❑ 0-1/5/10 kip dynamometer
- ❑ basket grip pullers
- ❑ cable cutter
- ❑ cable end seals
- ❑ cable pulling lubricant
- ❑ cable tray bend sheaves
- ❑ cable tray rollers
- ❑ capstan-type puller
- ❑ diameter tape
- ❑ duct cleaning mandrels
- ❑ electric safety blankets and clamps
- ❑ extension cords and GFCI protection
- ❑ fish tape or string blower/vacuum
- ❑ floodlights
- ❑ gang rollers: with at least 4 ft. effective radius
- ❑ gloves
- ❑ guide-in flexible tubing (elephant trunks)
- ❑ hand winches (come-a-long)
- ❑ HI-POT tester
- ❑ lint-free rags
- ❑ make-up air blower & hose
- ❑ manhole edge sheave
- ❑ measuring tape
- ❑ personal protection equipment (PPE)
- ❑ plywood sheets
- ❑ portable electric generator
- ❑ pre-lubing devices
- ❑ pulling rope
- ❑ pump, diaphragm
- ❑ radios or telephones
- ❑ reel arbor
- ❑ reel brakes
- ❑ reel jacks
- ❑ several wire rope slings of various lengths
- ❑ shackles/clevis
- ❑ short ropes for temp tie-offs
- ❑ swivels
- ❑ warning flags, signs

Installation—Feed-In Setups

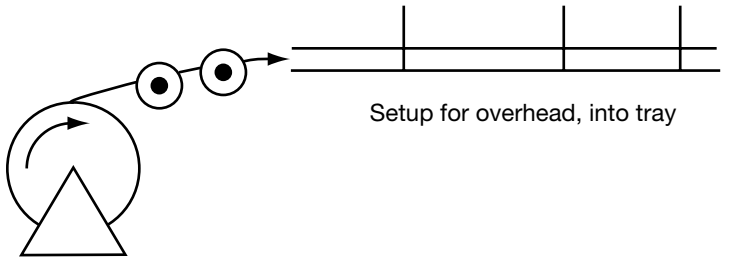
Cable Feed-In Setups

The following diagrams illustrate various cable feed-in setups:





Setup for duct close to floor



Setup for overhead, into tray

The feed-in setup should unreel the cable with a natural curvature (Figure 1) as opposed to a reverse "S" curvature (Figure 2).

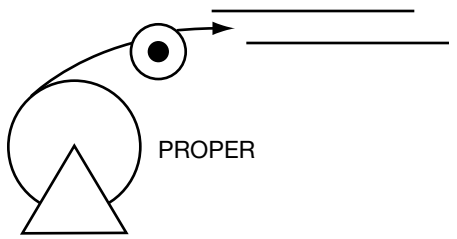


Figure 1

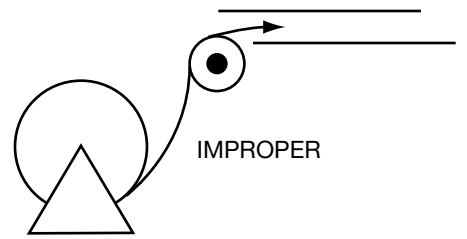


Figure 2

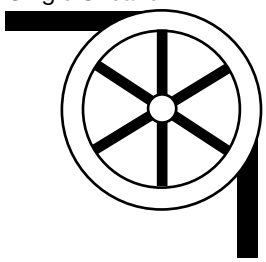
General Cable
Phone: 888-593-3355
www.generalcable.com

Installation—Feed-In Setups

Cable Feed-In Setups (continued)

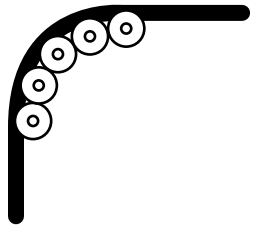
Single sheaves should only be used for GUIDING cables. Arrange multiple blocks to maintain bending radii whenever cable changes direction or elevation.

Single Sheave



For pulling around bends, use conveyor sheave assemblies of the appropriate radius series.

Sheave Assembly



The pulleys must be positioned to ensure that the effective curvature is smooth and changes direction or elevation evenly at each pulley. Never allow a polygon curvature to occur (Figure 3).

The fit of a pulley around the cable is also important when pulling heavy weights (i.e. pulleys at the top of a vertical drop).

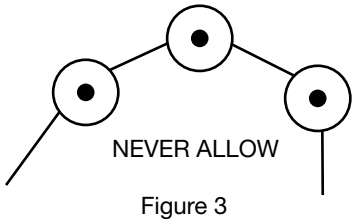
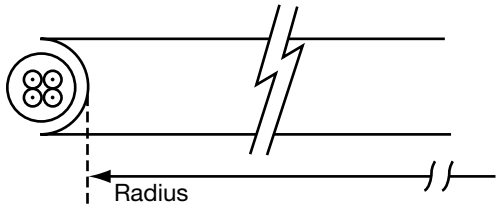


Figure 3

Remember to use the radius of the surface over which the cable is bent, not the outside flange diameter of the pulley. A “10 inch” cable sheave typically has a 10 inch outside flange diameter with a 6 inch inside diameter that provides an inside (bending) radius of 3 inches.



Installation—Conductor Maximum Pulling Tensions

Multiconductor Cables Having Equal-Sized Conductors;
In Parallel or as Multiplexed Assemblies

AWG/kcmil	MAXIMUM ALLOWABLE PULLING TENSION (LBS)					
	NUMBER OF CONDUCTORS					
	1	2	3	4	5	6
18	13	26	39	41	52	62
16	20	40	60	65	81	97
14	33	66	99	105	132	158
12	52	104	157	167	209	251
10	83	166	249	266	332	399
8	132	264	396	423	528	634
6	210	420	630	672	840	1008
4	334	668	1002	1069	1336	1603
2	531	1062	1593	1699	2124	2548
1	670	1339	2009	2142	2678	3214
1/0	845	1690	2534	2703	3379	4055
2/0	1065	2130	3194	3407	4259	5111
3/0	1342	2685	4027	4296	5370	6444
4/0	1693	3386	5078	5417	6771	8125
250	2000	4000	6000	6400	8000	9600
350	2800	5600	8400	8960	10000	10000
500	4000	8000	10000	10000	10000	10000
750	6000	10000	10000	10000	10000	10000
1000	8000	10000	10000	10000	10000	10000

The maximum allowable pulling tensions are for direct attachment to the conductor.
$T = 0.008 \times cmil \times n$, if $n \leq 3$
$T = 0.008 \times cmil \times n \times 0.8$, if $n > 3$

Installation—Conductor Maximum Pulling Tensions

Multiconductor Cables Having Equal-Sized Conductors, without Subassemblies

Number Of Conductors	MAXIMUM ALLOWABLE PULLING TENSION (LBS)				
	CONDUCTOR SIZE (AWG/kcmil)				
	18	16	14	12	10
2	26	40	66	104	166
3	39	60	99	157	249
4	41	65	105	167	266
5	52	81	132	209	332
6	62	97	158	251	399
7	73	113	184	293	465
8	83	129	210	334	531
9	93	145	237	376	598
10	104	161	263	418	664
12	124	194	316	502	797
14	145	226	368	585	930
15	156	242	395	627	996
16	166	258	421	669	1000
18	187	290	473	752	1000
19	197	306	500	794	1000
20	207	323	526	836	1000
22	228	355	549	919	1000
24	249	387	631	1000	1000
25	259	403	658	1000	1000
30	311	484	789	1000	1000
37	383	596	974	1000	1000

The maximum allowable pulling tensions are for multi conductor cables pulled into a raceway or cable tray using a basket grip or similar device secured directly to the cable jacket. It is recommended that a combination of basket grips and pulling eyes be used whenever possible.

$T = 0.008 \times cmil \times n$, if $n \leq 3$

$T = 0.008 \times cmil \times n \times 0.8$, if $n > 3$

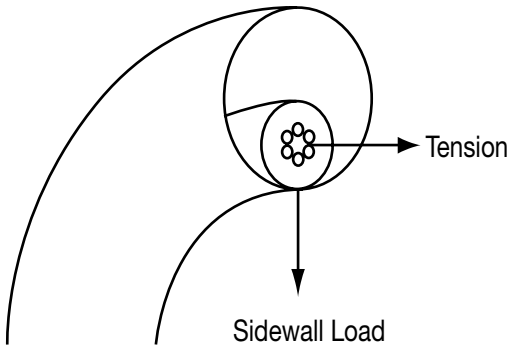
Installation—Maximum Sidewall Pressure

Overview

Sidewall bearing pressure (SWBP), or sidewall loading, is the radial force exerted on a cable being pulled around a conduit bend or sheave. Excessive SWBP can crush a cable and is, therefore, one of the most restrictive factors in installations having bends and requiring high pulling tensions. SWBP is reduced by increasing the radius of bends.

The maximum tension that can safely be applied to the cable during installation can be calculated using the maximum SWBP for the cable and the radius of the bend it is traversing.

For example, a cable having a maximum SWBP of 300 lb/ft that is being pulled around a bend having a radius of 2 feet should have no more than 300 lbs/ft x 2 ft or 600 lbs tension applied to it as the cable exits the bend.



CABLE TYPE	SWBP (LBS/FT)
300 V Nonshielded, 300 V and 600 V Shielded Control & Instrumentation	500
600 V Nonshielded Control & Instrumentation	500
600 V and 2400 V Nonshielded Power	1000
5 kV-35 kV Shielded Power	1000
Interlocked Armored Cable (all voltage)	300
CCW® MC-HL Armored Cable	500

General Cable's Approval List of Cable Pulling Lubricants

The following manufacturers, who are listed in the 2006 UL Electrical Construction Equipment Directory, provide wire pulling compounds intended for use as lubricants in installing electrical conductors in raceways. These manufacturers have had some of their products evaluated by Underwriters Laboratories (UL) to determine their compatibility with conductor insulation and coverings.

Since it is not feasible to test every possible combination of cable material with every wire pulling compound, the installer should check with the pulling compound manufacturer or the cable manufacturer to determine compatibility between specific cable materials and the pulling compound.

The Listing Mark for these products includes the UL symbol, together with the word "LISTED," a control number and the product name "Wire Pulling Compound." Refer to the latest edition of the UL Electrical Construction Equipment Directory for the current listing of manufacturers of wire pulling compounds and their control numbers.

3 M Company
American Bentonite International Inc.
American Polywater Corp.
Arnco Corp.
Dura-Line Corp.
Formulated Solutions LLC
Compound Co.
Greenlee Textron
Ideal Industries Inc.*
J. C. Whitlam Mfg. Co.
Klein Tools Inc.
Madison Electric Products Inc.
Rainbow Technology Corp.
Rectorseal
Robinette Inc., DBA Electro Compounds Co.
Thomas & Betts Corp.

*Yellow 77 not recommended for use with UniShield® cables.

For LSZH jacketed cable, consult with pulling compound manufacturers.

Other wire pulling compounds may be suitable for use with General Cable constructions. Contact the wire pulling compound manufacturer regarding the suitability of their products with specific General Cable products.

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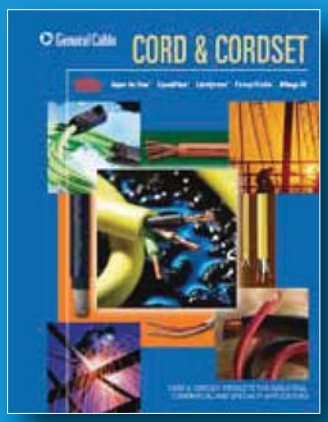

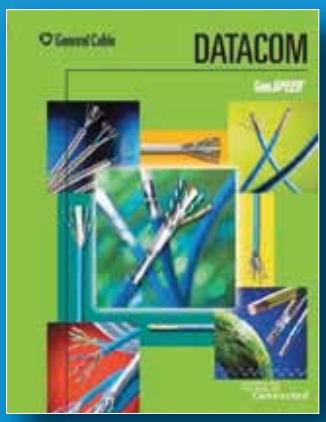

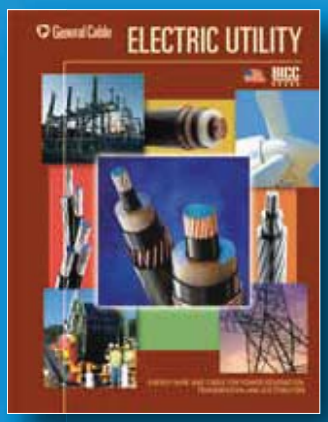

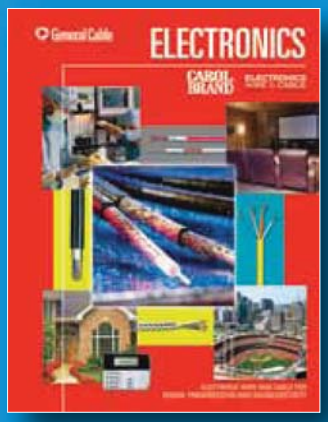

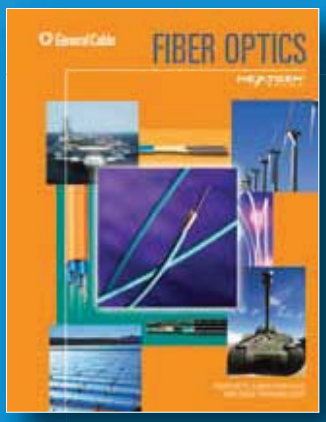

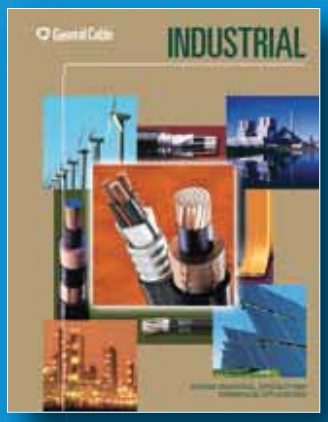

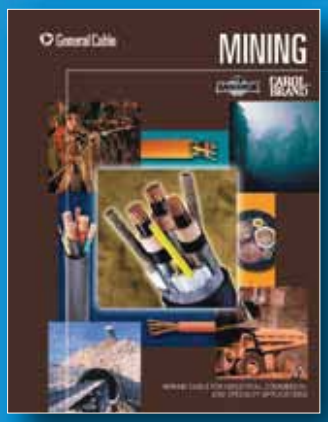

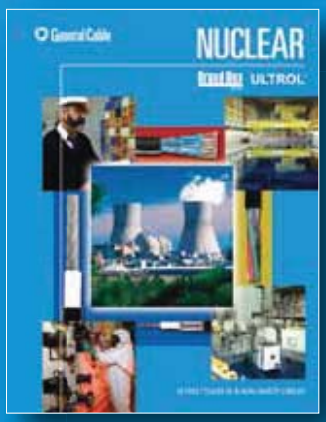

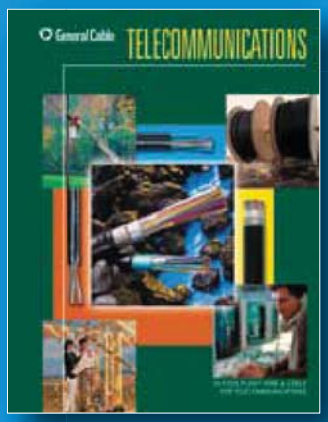

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