POLYRAD®

Rail & Transit

WIRE AND CABLE

General Cable

OCTOBER 2014

TRANSIT

POLYRAD®

Servicing the Rail & Transit Markets

This catalog contains in-depth information on the most comprehensive line of rail & transit wire and cable available today. It features the latest information on products, along with detailed technical and specification data in indexed sections — with an easy-to-use "spec-on-a-page" format.

The "spec-on-a-page" format was developed to meet your needs. It features up-to-the-minute product information, from applications and constructions to detailed technical and specification data. There's also a technical information section for additional assistance.

And, of course, if you need any further data, General Cable's Customer Service staff provides the answers you need quickly and efficiently.

General Cable

General Cable – Your Rail & Transit Partner

For rapid transit, locomotive applications and rolling stock, General Cable provides the toughest cables to meet the most demanding requirements for long-term performance and reliability. As an industry leader in a challenging marketplace, General Cable has the expertise, facilities and structure to deliver results:

- Leadership in Material Development
- Dedicated Engineering Expertise
- ISO 9001 Quality Assurance Program
- Advanced Customer eBusiness Tools

A Wide Range of Products

- Car/Locomotive Wiring
- Power Cables
- Control Cables
- Instrumentations Cables
- Coupler Cables
- Electronically Controlled Pneumatic Brake (ECP) Cables
- Data Communications Cables
- Diesel-Electric Locomotive (DLO) Cables
- 2 HR Fire-Rated Circuit Integrity Cables
- Head-End Power Cables
- HVAC System Cables
- Off-Road Equipment Cables

Major End-Users Supplied

- Original Equipment Manufacturers (OEM)
  - Car Builders & Rebuilders
  - Locomotive Builders & Rebuilders
- Transit Agencies
- Distributors
- Subcontractors to Original Equipment Manufacturers (OEM)
- System Integrators

General Cable's Willimantic, Connecticut plant is one of the most diverse manufacturing facilities of its kind. More than 600,000 square feet of modern manufacturing space is dedicated to design, development, engineering and manufacturing, as well as a wide range of in-house testing and technical support. General Cable's Industrial & Specialty facility has the expertise to design and develop an extensive variety of materials into thousands of cable constructions for sustained and continuous operations in challenging environments. Focused on providing outstanding quality, service and technical support on behalf of our customers, General Cable is the best partner for current and next-generation transit cabling systems.

General Cable
Phone: 866.248.7060
www.generalcable.com

Quality is Number One

General Cable is always committed to exceeding our customers' expectations for quality and performance. We strive to ensure quality through extensive in-house and third-party testing with strict adherence to specifications and industry standards, as demonstrated by the following certifications and compliances.

IRIS Certification

General Cable's transit wire and cable facility is now IRIS (International Railway Industry Standard) Certified. UNIFE, the Association of the European Rail Industry, was created in 1991 in anticipation of the creation of the European Union. In 2005, UNIFE established IRIS with the goal of securing higher quality in the railway industry. This recognized industry certification enables railway component suppliers to meet globally recognized levels of quality for its railway components. General Cable is the first wire and cable manufacturer in the Americas to achieve IRIS Certification*. Combined with IRIS Certification in our Barcelona, Spain facility, General Cable meets the transit sector's needs throughout the Americas and Europe. General Cable's IRIS Certification ensures improved product quality and efficient procedures throughout the whole supply chain.

ISO 9001/2008 Compliance

ISO 9001 is the world's most established quality framework to demonstrate the ability to consistently provide product that meets applicable requirements and enhances customer satisfaction through processes that ensure quality. General Cable is the only wire and cable company in North America to be both ISO 9001:2008 *and* IRIS Certified.

UL and CSA Approved Laboratories

General Cable's Willimantic, CT facility has a laboratory quality system based on ISO/IEC 17025:2005, encompassing proper test equipment, test environment, personnel qualifications, test standards and procedures, and data recording and reporting procedures. Accordingly, the Willimantic lab is approved by Underwriters Laboratories (UL) as a testing facility. In fact, the facility is audited and approved by UL for their Client Test Data Program (CTDP), demonstrating a level of performance that does not require UL to witness on-site testing. UL assesses the lab's quality systems and testing methods on an annual basis.

The Willimantic lab is also approved by CSA International (CSA). The CSA Category Program Certification (CPC) is based on ISO/IEC 17025:2005, which provides more repeatable and reliable test results to bring innovative products to market quicker. The General Cable Willimantic facility is certified by CSA to conduct our own testing in a product category. CSA certification requires General Cable to have thorough knowledge of the applicable product standards, access to suitable test facilities and a demonstrated ability to design, manufacture and test products that consistently comply with the standards.

* IRIS Certifications are for Product Category 12, Cabling and Cabinets (design, development and production of electric special cables [power and instrumentation] for the railway industry).

"Quality is not something that is achieved and then forgotten but something that we work to improve every day by continuously focusing on design, technology, and control. Improved product designs and investment in people and equipment are all part of our quality commitment to you."

Greg Lampert
President and CEO
General Cable
North America

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PRODUCT SELECTION LOCATOR

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Serving the Rail & Transit Markets

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Serving the Rail & Transit Markets

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One Company
Connecting The World

POWERFUL PRESENCE · PRODUCTS PERFORMANCE · PEOPLE

General Cable has been a wire and cable innovator for over 170 years, always dedicated to connecting and powering people's lives. Today, with more than 14,500 employees and more than $6 billion in revenues, we are one of the largest wire and cable manufacturers in the world.

Our company serves customers through a global network of 57 manufacturing facilities in 26 countries and has worldwide sales representation and distribution. We are dedicated to the production of high-quality aluminum, copper and fiber optic wire and cable and systems solutions for the energy, construction, industrial, specialty and communications sectors. With a vast portfolio of products to meet thousands of diverse application requirements, we continue to invest in research and development in order to maintain and extend our technology leadership by developing new materials, designing new products, and creating new solutions to meet tomorrow's market challenges.

In addition to our strong brand recognition and strengths in technology and manufacturing, General Cable is also competitive in such areas as distribution and logistics, marketing, sales and customer service. This combination enables us to better serve our customers globally and as they expand into new geographic markets.

General Cable offers our customers all the strengths and value of a large company, but our people give us the agility and responsiveness of a small one. We service you globally or locally.

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CONNECTING THE WORLD

Visit our Website at
www.generalcable.com

General Cable

Corporate Social Responsibility

CREATING SHARED VALUE

General Cable believes corporate social responsibility (CSR) is about creating shared value. That means keeping a dual focus in our business decisions: what is good for us as a company and what contributes to the greater good of the communities in which we live and work.

SAFETY

Working safer by working together

General Cable has one worldwide safety vision and goal – ***ZERO & BEYOND***. We measure safety performance globally, share best practices and implement sound health and safety management systems. Many of our facilities worldwide are OHSAS 18001 (safety management system) certified. All North American facilities have implemented an equivalent health and safety management system. General Cable was a pioneer in obtaining the OHSAS 18001 Certificate for Occupational Health and Safety Management Systems in Europe and North Africa.

SUSTAINABILITY

Responsible practices in daily operations

As a global leader in the wire and cable industry, General Cable recognizes its role and responsibility in promoting sustainability. Our strongest business value is continuous improvement in all areas of our company. Across our many businesses, the quest to introduce new and better products through continuous improvement in environmental designs reflects our commitment to achieving industry-leading standards and responding proactively to global environmental issues. General Cable was the first cable manufacturer to obtain certification for its environmental management system, in accordance with the ISO 14001 and EMAS Standards.

CITIZENSHIP

A commitment to being good citizens

Being responsible citizens in our communities is of the utmost importance to us. Unequivocal honesty, integrity, forthrightness and fair dealing have long been part of General Cable's core values and are expected globally in all of our business relationships with our customers, employees, suppliers, neighbors and competitors. Our company leaders and employees strive to make a difference throughout a host of volunteer activities and financial support, improving the communities in which we live and work.

INNOVATION

Technologies that power and connect the world

General Cable is delivering innovation that matters. We are focusing on R&D expertise and investing in developing wire and cable solutions that meet the challenges confronting our customers and the world. In working together and using all the ingenuity and creativity we have, we will reach the goal of being the preeminent supplier of wire and cabling solutions in the industry, with both green constructions and designs for the ever-growing renewable energy market.

GREEN INITIATIVE

A commitment to achieving industry-leading standards and responding proactively to environmental global issues.

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Visit www.GeneralCableCSR.com to learn more.

Polyrad® XT Flexible Rail & Transit Wire and Cable

General Cable's Polyrad® XT rail & transit wire and cable is the chosen solution for demanding environments throughout North America and the world. Polyrad® XT is used extensively on all types of rapid transit and freight cars, heavy- and light-rail cars, diesel-electric locomotives and off-road vehicles.

Polyrad® XT rail & transit cables are specifically designed for original equipment and retrofit use in power and control circuits and in motor leads. Polyrad® XT's superior heat, flexibility and abrasion resistance, combined with its reduced size, simplifies cable installation and permits higher ampacities. Fully tested to meet all applicable specifications, Polyrad® XT cables ensure lifelong dependable service for transit, off-road and diesel-powered locomotives.

Unlike conventional insulating systems, Polyrad® XT offers a better balance of electrical properties for superior stability and performance. Available in both 600 volt and 2000 volt constructions, Polyrad® XT single-conductor rail & transit cables are dual-rated at 125°C and 110°C. Available in 600 volt and 2000 volt constructions, Polyrad® XT multi-conductor shielded and non-shielded rail & transit cables are rated at 125°C.

Insulation System and Construction

Polyrad® XT insulation features a highly engineered and refined low-smoke polyolefin formulation used in conjunction with soft annealed tinned copper conductors per ASTM B33. This innovative insulation technology combines outstanding flame retardance with excellent moisture-stable electrical values. The construction is further enhanced by radiation cross-linking, which transforms the original thermoplastic into a rugged thermosetting material. The end result is a compound with excellent thermal stability – it will not soften or flow at elevated temperatures.

- Increased durability
- Greater resistance to cut-through
- Superior oil resistance
- Excellent low-temperature performance
- Maximum flexibility

Product Features and Benefits

Polyrad® XT wire and cables combine superior electrical properties and performance for advanced rapid transit, locomotive and off-road equipment applications.

- Dual 125°C/110°C temperature rating for long life, higher ampacities and protection from thermal overloads (single wires)
- Maximum flame retardance as demonstrated by VW-1 and, for multi-conductor cables, IEEE 383 (70,000 BTU/hr.) and IEEE 1202 (70,000 BTU/hr.)
- Excellent oil and chemical resistance
- Maximum dependability and mechanical toughness
- Smaller outside diameter and flexible stranding and insulation simplify installation

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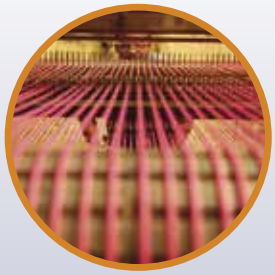
POLYRAD®

Polyrad® XT – The Trusted Name in Rail & Transit Wire and Cable

For more than 30 years, General Cable's Polyrad® XT has been the most respected name in rail & transit wire and cable. First introduced to the marine market for offshore oil rigs, ships and mobile land rigs, Polyrad® XT was developed to perform in the most rugged conditions, passing a wide range of stringent test procedures and standards. Since its introduction to the rail & transit markets, Polyrad® XT has been the leading wire and cable choice for rapid transit and freight cars, heavy- and light-rail cars, diesel-electric locomotives and off-road vehicles.

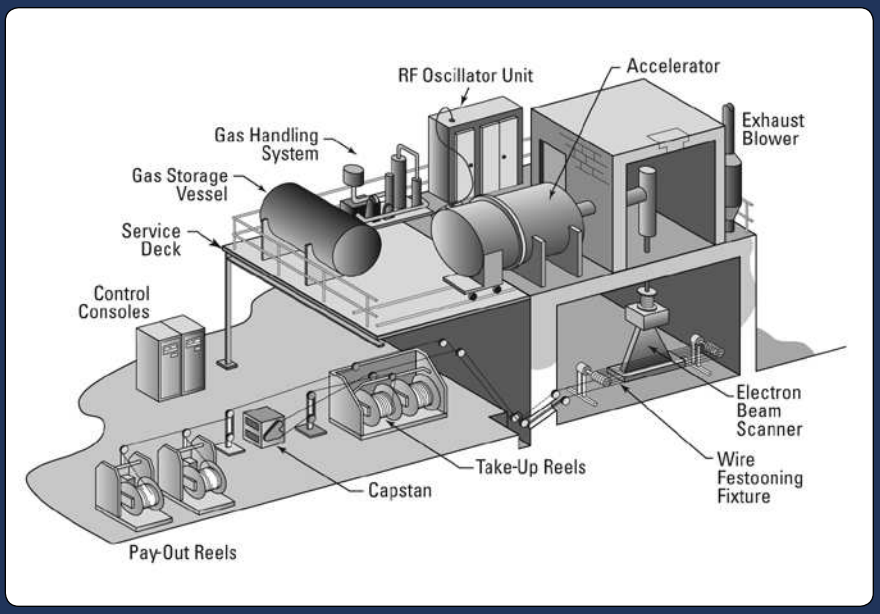


Polyrad® XT's Dual Rating

As the industry's first rail & transit wire and cable with a dual 125°C/110°C temperature rating, Polyrad® XT combines the superior properties and performance of a 125°C product while meeting all industry requirements for traditional 110°C transit wire. For distributors, this unique dual rating practically reduces inventory by half. Polyrad® XT meets all performance requirements of AAR RP-585 and ICEA S-95-658, as well as transit industry specifications.

Polyrad® XT Wire and Cable Testing

General Cable has perfected the technique of radiation processing. Cross-linking the insulation and jacket using our unique radiation process creates a more flexible product. In radiation cross-linking, a scanner accurately and uniformly directs a high-energy electron beam from a power source over the wire insulation, resulting in a precise degree of cross-linking. This technique enables General Cable to effectively process smaller wires with thin insulation walls to meet the transit market's critical demand for high-density cabling.



Electrical Properties

Requirement ICEA S-95-658		Typical General Cable*
Insulation Resistance @ 125°C (megohms-Mft)	2.0 Min.	8.3
Insulation Resistance Constant (K)	10,000 Min.	30,600
Long-Term Insulation Resistance 26 Weeks @ 90°C in water (megohms-Mft)	10 Min.	15
Accelerated Water Absorption Electrical SIC 24 hours @ 75°C	6.0 Max.	4.9
Increase in Capacitance, Percent		
1-14 Days	3.0 Max.	2.5
7-14 Days	1.5 Max.	1.3
Stability Factor after 14 days	1.0 Max.	0.18

Physical Properties

Requirement AAR RP-585 (S-501)		Typical General Cable*
Unaged Requirement Tensile Strength, Min. PSI Elongation at Rupture, Min. %	 1,400 Min. 200 Min.	 2,710 260
Aged Requirement After Air Oven 7 days @ 158°C ± 2°C Tensile Strength (% of original) Elongation (% of original)	 90 Min. 50 Min.	 100 69
Oil Immersion Aging – ASTM #2 18 hours @ 120°C Tensile Strength (% of original) Elongation (% of original) 7 days @ 70°C Tensile Strength (% of original) Elongation (% of original)	 50 Min. 50 Min. 70 Min. 70 Min.	 69 65 76 74
Hot Oil Resistance, % Swell 100 hours @ 150°C	 60 Max.	 32
Cold Bend @ -55°C	No Cracks	No Cracks
Cold Shock 1 hour @ -40°C	No Cracks	No Cracks
Cut-Through Penetration 10 minutes @ 125°C	 No Failure	 Pass

* Typical values are from various General Cable and independent laboratory testing.

Important Advantages of Radiation Cross-Linking

Advantage	Reason
More flexible cable	Pressure-applied insulation and jacket are not required
No separator tapes	Less pressure is applied during the radiation process
Free stripping	Insulation is not driven into the conductor stranding
Better electrical properties	No chemical catalyst required. No residues which lower electrical properties and corrode copper
Cables and interstices kept free of water	Water is not used in the radiation cure operation
Range of insulation thickness	Radiation process can economically cross-link thin or heavy walls
Permanent colors	Radiation does not change or fade colors. Tracer colors remain vivid

Standards

Polyrad® XT cables are manufactured, tested and inspected in accordance with the latest issue of the following standards:	
AAR RP-585	Wiring and Cable Specification
ASTM B33	Tinned Soft or Annealed Copper Wire
ASTM D149	Test for Dielectric Breakdown Voltage and Dielectric Strength of Electrical Insulating Materials at Commercial Power Frequencies
ICEA S-95-658	Standard for Non-Shielded Power Cables Rated 2000 V or Less for the Distribution of Electrical Energy
UL 44	Standard for Rubber Insulated Wire and Cable
IEEE 1202	Standard for Flame Testing of cables for use in cable tray within Industrial and Commercial occupancies
NFPA® 130	Standard for Fixed Guideway Transit and Passenger Rail Systems

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Transit Cable Design Parameters

General Applications

Transit General Purpose
Control Wiring
Cab Control Area
HVAC System

Speed Sensor Control
Hot Bearing Detector Area

Trainline Control Cables
Multi-Conductor Composite

Interconnect Cables
480 V Transpower Cables

General Interior Car Body Wiring
Category 5e
Shielded Pair 100 Ohm + 120 Ohm
Control Circuit Cables
Braking System Cables
Instrumentation

Customer _____

Contact _____

Phone _____ E-mail _____ Fax _____

Type of Application: ☐ General Purpose ☐ Speed Sensor Control ☐ Trainline Control ☐ Interconnect Cables ☐ General Interior Car Body Wiring

Description of Application or Program: _____

_____

Estimated Annual Usage: _____

Description of Cable Construction:
Example: 3/C 16 AWG 600 V Shielded

_____

_____

Operating Environment:
☐ Inside Locomotive or Cab Wiring ☐ Outside Car or Car Wiring

☐ **Single-Conductor Cables** ☐ **Multi-Conductor Primary Wires**

Conductor AWG Size: _____

Conductor Stranding: ☐ Per AAR RP-585
☐ 19 Strands: 20 AWG - 12 AWG ☐ Class I: 10 AWG - 1111 kcmil ☐ Class K

Insulation Type: ☐ Polyrad® XT (XLPO) ☐ Polyrad® Ultra (XLPO/XL Fluoropolymer-Dual Wall)
☐ Other _____

Temperature Rating: ☐ 125°C ☐ 110°C ☐ Other _____

Voltage Rating: ☐ 600 V ☐ 2000 V ☐ Other _____

Cable Diameter Limitations: ☐ None ☐ Other _____

Cable Marking: ☐ Standard GC Print Legend ☐ Other _____

Put-Up Length: ☐ Standard GC Reel Put-Up ☐ Other _____

Maximum Reel Size: _____

Multi-Conductor Cables

Number of Conductors or Pairs: _____

Color Code: ☐ E1 (Black, White, Red, etc.)
☐ E2 (Black, Red, Blue, etc.)
☐ Method 4 (All Conductors Black with Printed Numbers)
☐ Other _____

Shield Type: ☐ Aluminum/Mylar Tape with Drain Wire
☐ Braid
AWG Size _____
Coverage _____
☐ Other _____

Jacket Type: ☐ Polyrad® XT
☐ Neoprene
☐ Other _____

Cable Diameter Limitations: ☐ None ☐ Other _____

Cable Marking: ☐ Standard GC Print Legend ☐ Other _____

Put-Up Length: ☐ Standard GC Reel Put-Up ☐ Other _____

Maximum Reel Size: _____

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Polyrad® XT, Polyrad® ULTRA and Polyrad® XT-TX Wire and Cable Products

1

POLYRAD®

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Polyrad® XT Flexible Wire and Cable

600 V, Single-Conductor, Dual Rated – 125°C/110°C

Product Construction:

Conductor:
- 20 AWG thru 1111 kcmil soft annealed tinned copper per ASTM B33, B8 and B172

Insulation:
- Polyrad® XT flame-retardant, low-smoke irradiated Cross-linked Polyolefin (XLPO)

Print:
- GENERAL CABLE® (WC) POLYRAD® XT 125°C/110°C XXAWG 600 V YEAR/MONTH

Options:
- Available in multi-conductor constructions
- Class K stranding
- Available in colors other than dark gray

Applications:
- Ideally suited for use where environmental factors require cable characteristics to perform with a high degree of flame retardancy and excellent moisture-stable electrical values. Where reliability is the major concern and where maximum performance will be demanded
- Engineered and manufactured for both original equipment and retrofit use in power and control circuits and in motor leads
- Extensively found on all types of heavy- and light-rail cars, rapid transit cars, diesel-electric locomotives, freight cars and off-road vehicles

Features:
- Dual temperature rating at 125°C/110°C for long life, higher ampacities and protection from thermal overloads
- Excellent flexibility & free stripping
- Outstanding thermal stability at elevated temperatures
- Maximum flame retardance and low toxicity
- Excellent low-temperature performance; suitable for installation in sub-zero conditions
- Extra-tough, mechanically rugged irradiated thermoset insulation
- Resistant to most oils and chemicals
- Meets cold bend test at –55°C
- Meets cold impact test at –40°C

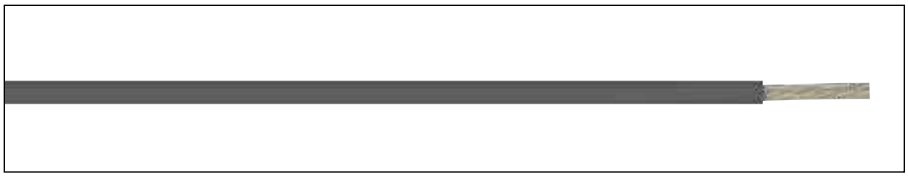
Compliances:

Industry:
- AAR S-501/AAR RP-585
- ICEA S-95-658
- RoHS Compliant

Flame Test:
- IEEE 1202 (70,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- VW-1

Other:
- BSS 7239
- SMP 800-C
- ASTM E662
- NFPA 130 STD 2010
- ASTM 1354

Packaging:
- Standard reel put-up



POLYRAD® XT 600 V

CATALOG NUMBER STOCK*	CONDUCTOR (AWG/kcmil) SIZE AND STRANDING		NOMINAL CONDUCTOR DIAMETER		NOMINAL INSULATION THICKNESS		NOMINAL CABLE DIAMETER		COPPER WEIGHT		NET CABLE WEIGHT		AMPACITY (FREE AIR 40°C AMBIENT)	
			INCHES	mm	MILS	mm	INCHES	mm	LBS./ 1000'	kg/km	LBS./ 1000'	kg/km	110°C	125°C
315130	20	19/32	0.038	0.97	30	0.76	0.098	2.49	4	6	8	12	15	17
280710*	18	19/30	0.048	1.21	30	0.76	0.108	2.74	6	9	11	16	17	19
280720*	16	19/29	0.054	1.37	30	0.76	0.114	2.90	8	12	13	19	23	25
280700*	14	19/27	0.067	1.70	30	0.76	0.127	3.23	12	18	17	25	39	42
296420*	12	19/25	0.086	2.18	30	0.76	0.146	3.71	19	28	26	39	51	55
303910*	10	27/24	0.117	2.97	30	0.76	0.177	4.50	34	50	42	63	67	72
296490	8	37/24	0.135	3.43	45	1.14	0.225	5.72	47	70	61	91	85	92
330230*	6	61/24	0.174	4.42	45	1.14	0.264	6.71	76	114	95	142	120	130
355320	5	91/24	0.242	6.15	45	1.14	0.332	8.43	116	173	139	211	151	163
318420	4	105/24	0.262	6.68	45	1.14	0.352	8.94	137	204	162	241	160	173
355330	3	125/24	0.285	7.24	45	1.14	0.375	9.53	167	284	191	284	199	215
355340	2	150/24	0.307	7.80	45	1.14	0.397	10.08	190	283	218	325	214	231
355350	1	225/24	0.380	9.65	55	1.40	0.490	12.45	287	427	346	515	247	267
355360	1/0	275/24	0.410	10.41	55	1.40	0.520	13.21	351	522	414	616	286	309
355370	2/0	325/24	0.470	11.94	55	1.40	0.580	14.73	407	606	471	701	329	355
355380	3/0	450/24	0.549	13.94	55	1.40	0.659	16.74	594	884	652	970	380	410
355390	4/0	550/24	0.593	15.06	55	1.40	0.703	17.86	696	1036	771	1147	446	482
355400	262	650/24	0.630	16.00	65	1.65	0.760	19.30	820	1220	913	1359	524	566
355410	313	775/24	0.685	17.40	65	1.65	0.815	20.70	987	1469	1089	1621	590	637
355420	373	925/24	0.750	19.05	65	1.65	0.880	22.35	1176	1750	1289	1918	657	710
355430	444	1100/24	0.820	20.83	65	1.65	0.950	24.13	1413	2207	1537	2287	734	793
355440	535	1325/24	0.895	22.73	80	2.03	1.055	26.80	1697	2525	1862	2771	828	894
355450	646	1600/24	0.980	24.89	80	2.03	1.140	28.96	2020	3006	2202	3277	931	1005
355460	777	1925/24	1.075	27.31	80	2.03	1.235	31.37	2435	3624	2564	3816	1047	1130
355470	929	2300/24	1.230	31.24	80	2.03	1.390	35.31	3117	4638	3401	5061	1168	1260
355480	1111	2750/24	1.328	33.73	95	2.41	1.518	38.56	3400	5060	3915	5826	1254	1354

Dimensions and weights are nominal; subject to industry tolerances.

Note: At the option of the purchaser, the manufacturer's standard type of stranding will be acceptable, providing that the conductor diameter does not exceed the values shown. The total number of wires shall be as specified, plus or minus one percent, except 150/24 which may vary by minus two percent, providing that the conductor diameter does not exceed the values shown.

*Standard stock items

Color Code Chart

(Including but not limited to)

ORDERING SUFFIX	COLOR	ORDERING SUFFIX	COLOR
00	Dark Gray	05	Green
02	Red	08	Light Gray
04	Yellow	09	White

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RoHS Compliant
Directive 2011/65/EU

POLYRAD®

Polyrad® XT Flexible Wire and Cable

2000 V, Single-Conductor, Dual Rated – 125°C/110°C

POLYRAD® XT 2000 V – STANDARD INSULATION THICKNESS

CATALOG NUMBER STOCK*	CONDUCTOR (AWG/kcmil) SIZE AND STRANDING		NOMINAL CONDUCTOR DIAMETER		NOMINAL INSULATION THICKNESS		NOMINAL CABLE DIAMETER		COPPER WEIGHT		NET CABLE WEIGHT		AMPACITY (FREE AIR 40°C AMBIENT	
			INCHES	mm	MILS	mm	INCHES	mm	LBS./ 1000'	kg/km	LBS./ 1000'	kg/km	110°C	125°C
364980	20	19/32	0.038	0.97	45	1.14	0.128	3.25	4	6	10	15	15	17
300620*	18	19/30	0.048	1.21	45	1.14	0.138	3.51	6	9	14	21	17	19
300890*	16	19/29	0.054	1.37	45	1.14	0.144	3.66	8	12	16	24	23	25
280740*	14	19/27	0.067	1.70	45	1.14	0.157	3.99	12	18	22	33	39	42
303480*	12	19/25	0.086	2.18	45	1.14	0.176	4.47	19	28	31	46	51	55
301260*	10	27/24	0.117	2.97	45	1.14	0.207	5.26	34	50	47	70	67	72
269970*	8	37/24	0.135	3.43	55	1.40	0.245	6.22	47	70	66	98	85	92
297970*	6	61/24	0.174	4.42	55	1.40	0.284	6.96	76	114	100	149	120	130
355490*	5	91/24	0.242	6.15	55	1.40	0.352	8.94	116	173	149	222	151	163
301270*	4	105/24	0.262	6.68	55	1.40	0.372	9.45	137	204	169	252	160	173
325290*	3	125/24	0.285	7.24	55	1.40	0.395	10.03	167	284	197	293	199	215
302440*	2	150/24	0.307	7.80	55	1.40	0.417	10.59	190	283	226	336	214	231
355500*	1	225/24	0.380	9.65	65	1.65	0.510	12.95	287	427	353	525	247	267
296500*	1/0	275/24	0.410	10.41	65	1.65	0.540	13.72	351	522	420	625	286	309
301280*	2/0	325/24	0.470	11.94	65	1.65	0.600	15.24	407	606	481	716	329	355
300900*	3/0	450/24	0.549	13.94	65	1.65	0.679	17.25	594	884	663	987	380	410
296510*	4/0	550/24	0.593	15.06	65	1.65	0.723	18.36	696	1036	792	1179	446	482
267040*	262	650/24	0.630	16.00	75	1.91	0.780	19.81	820	1220	931	1386	524	566
296520*	313	775/24	0.685	17.40	75	1.91	0.835	21.21	987	1469	1108	1649	590	637
304020*	373	925/24	0.750	19.05	75	1.91	0.900	22.86	1176	1750	1310	1950	657	710
300180	444	1100/24	0.820	20.83	75	1.91	0.970	24.64	1413	2207	1561	2323	734	793
263400*	535	1325/24	0.895	22.73	90	2.29	1.075	27.31	1697	2525	1888	2810	828	894
355570	646	1600/24	0.980	24.89	90	2.29	1.160	29.46	2020	3006	2231	3320	931	1005
260080	777	1925/24	1.075	27.31	90	2.29	1.255	31.88	2435	3624	2681	3990	1047	1130
355600	929	2300/24	1.230	31.24	90	2.29	1.410	35.81	3117	4638	3431	5106	1168	1260
355620	1111	2750/24	1.328	33.73	110	2.79	1.548	39.32	3400	5060	3972	5911	1254	1354

POLYRAD® XT 2000 V – HEAVY WALL INSULATION THICKNESS

355510	4/0	550/24	0.593	15.06	105	2.67	0.803	20.40	696	1036	837	1246	446	482
355520	262	650/24	0.630	16.00	105	2.67	0.840	21.34	820	1220	969	1442	524	566
355530	313	775/24	0.685	17.40	105	2.67	0.895	22.73	987	1469	1149	1710	590	637
355540	373	925/24	0.750	19.05	105	2.67	0.960	24.38	1176	1750	1353	2013	657	710
355550	444	1100/24	0.820	20.83	105	2.67	1.030	26.16	1413	2207	1607	2392	734	793
355560	535	1325/24	0.895	22.73	120	3.05	1.135	28.83	1697	2525	1946	2896	828	894
355580	646	1600/24	0.980	24.89	120	3.05	1.220	30.99	2020	3006	2285	3400	931	1005
355590	777	1925/24	1.075	27.31	120	3.05	1.315	33.40	2435	3624	2727	4058	1047	1130
355610	929	2300/24	1.230	31.24	120	3.05	1.470	37.34	3117	4638	3539	5267	1168	1260
355630	1111	2750/24	1.328	33.73	120	3.05	1.568	39.83	3400	5060	4011	5969	1254	1354

Dimensions and weights are nominal; subject to industry tolerances.

Note #1: Where additional insulation thickness is desired for added mechanical protection, these values are noted in the second chart.

Note #2: At the option of the purchaser, the manufacturer's standard type of stranding will be acceptable providing that the conductor diameter does not exceed the values shown. The total number of wires shall be as specified, plus or minus one percent, except 150/24 which may vary by minus two percent, providing that the conductor diameter does not exceed the values shown.

*Standard stock items

Product Construction:

Conductor:
- 20 AWG thru 1111 kcmil soft annealed tinned copper per ASTM B33, B8 and B172

Insulation:
- Polyrad® XT flame-retardant, low-smoke irradiated Cross-linked Polyolefin (XLPO)

Print:
- GENERAL CABLE® (WC) POLYRAD® XT 125°C/110°C XXAWG 2000 V YEAR/MONTH

Options:
- Class K stranding
- Available in colors other than dark gray

Applications:
- Ideally suited for use where environmental factors require cable characteristics to perform with a high degree of flame retardancy and excellent moisture-stable electrical values. Where reliability is the major concern and where maximum performance will be demanded
- Engineered and manufactured for both original equipment and retrofit use in power and control circuits and in motor leads
- Extensively found on all types of heavy- and light-rail cars, rapid transit cars, diesel-electric locomotives, freight cars and off-road vehicles

Features:
- Dual temperature rating at 125°C/110°C for long life, higher ampacities and protection from thermal overloads
- Excellent flexibility and free stripping
- Outstanding thermal stability at elevated temperatures
- Maximum flame retardance and low toxicity
- Excellent low-temperature performance; suitable for installation in sub-zero conditions
- Extra-tough, mechanically rugged irradiated thermoset insulation
- Resistant to most oils and chemicals
- Meets cold bend test at –55°C
- Meets cold impact test at –40°C

Compliances:

Industry:
- AAR S-501/AAR RP-585
- ICEA S-95-658
- RoHS Compliant

Flame Test:
- IEEE 1202 (70,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- VW-1

Other:
- BSS 7239
- SMP 800-C
- ASTM E662
- NFPA 130 STD 2010
- ASTM 1354

Packaging:
- Standard reel put-up

Color Code Chart

(Including but not limited to)

ORDERING SUFFIX	COLOR	ORDERING SUFFIX	COLOR
00	Dark Gray	05	Green
02	Red	08	Light Gray
04	Yellow	09	White

POLYRAD®

RoHS Compliant
Directive 2011/65/EU

General Cable
Phone: 866.248.7060
www.generalcable.com

Polyrad® XT Multi-Conductor Cable

600 V or 2000 V, 125°C, Shielded or Non-Shielded

General Cable manufactures an extensive array of cables to support the many and diverse applications of transit infrastructures. To meet the needs of the evolving transit and locomotive industry, General Cable consistently brings new innovative cabling concepts to market with better technology, superior safety, easier and faster installation and extended performance. Polyrad® XT multi-conductor shielded and non-shielded rapid transit and locomotive car cables are rated at 125°C and supplied in both 600 and 2000 Volt constructions.

Product Construction:

Conductor:
- 20 AWG thru 4/0 AWG soft annealed tinned copper per ASTM B33, B8 and B172

Insulation:
- Polyrad® XT flame-retardant, low-smoke irradiated Cross-linked Polyolefin (XLPO)

Shield Options:
- Tinned copper braid
- Foil with drain wire
- Non-shielded

Jacket:
- Polyrad® XT flame-retardant, low-smoke irradiated Cross-linked Polyolefin (XLPO)

Print (Including but not limited to):
- GENERAL CABLE® (WC) POLYRAD® XT XX/COND XXAWG SHIELDED 125°C 600 V YEAR/MONTH

Options:
- Available in E1, E2 or Method 4 color codes

Applications:
- Ideally suited for use where environmental factors require cable characteristics to perform with a high degree of flame retardancy and excellent moisture-stable electrical values. Where reliability is the major concern and where maximum performance will be demanded

Applications (cont'd.):
- Engineered and manufactured for both original equipment and retrofit use in electronic equipment
- Extensively found on all types of heavy- and light-rail cars, rapid transit cars, diesel-electric locomotives, freight cars and off-road vehicles

Features:
- Temperature rating at 125°C for long life, higher ampacities and protection from thermal overloads
- Excellent flexibility and free stripping
- Outstanding thermal stability at elevated temperatures
- Maximum flame retardance
- Excellent low-temperature performance; suitable for installation in sub-zero conditions
- Extra-tough, mechanically rugged irradiated thermoset insulation and jacket
- Resistant to most oils and chemicals

Compliances:

Industry:
- ICEA S-95-658
- RoHS Compliant

Flame Test:
- IEEE 1202 (70,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- VW-1

Other:
- BSS 7239
- SMP 800-C
- ASTM E662
- NFPA 130 STD 2010

Packaging
- Standard reel put-up

The multi-conductor cables shown in the following tables are merely a sampling of General Cable's wide range of products. Other conductor sizes, designs and/or specific installation requirements are available to meet virtually all the cabling needs of the transit and locomotive industry. For more information, contact General Cable's Transit inside sales at info@generalcable.com.

TWO CONDUCTOR POLYRAD® XT 600 V SHIELDED - 36 AWG TINNED COPPER BRAID - 85% MINIMUM COVERAGE

CATALOG NUMBER	AWG		INSULATED DIAMETER		JACKET THICKNESS		CABLE DIAMETER		NET CABLE WEIGHT	
	SIZE	STRANDING	INCHES	mm	MILS	mm	INCHES	mm	LBS./1000'	kg/km
324680	20	19/32	0.098	2.49	45	1.14	0.315	8.0	59	88
376760	18	19/30	0.108	2.74	45	1.14	0.330	8.4	63	94
373770	16	19/29	0.114	2.90	45	1.14	0.345	8.8	73	109
412170	14	19/27	0.127	3.23	45	1.14	0.370	9.4	86	130
373750	12	19/25	0.146	3.71	45	1.14	0.410	10.4	109	162

THREE CONDUCTOR POLYRAD® XT 600 V SHIELDED - 36 AWG TINNED COPPER BRAID - 85% MINIMUM COVERAGE

374360	20	19/32	0.098	2.49	45	1.14	0.325	8.3	68	88
387460	18	19/30	0.108	2.74	45	1.14	0.345	8.8	72	94
373780	16	19/29	0.114	2.90	45	1.14	0.360	9.2	87	130
412180	14	19/27	0.127	3.23	45	1.14	0.390	9.7	108	161
373760	12	19/25	0.146	3.71	45	1.14	0.430	10.9	139	162

FOUR CONDUCTOR POLYRAD® XT 600 V SHIELDED - 36 AWG TINNED COPPER BRAID - 85% MINIMUM COVERAGE

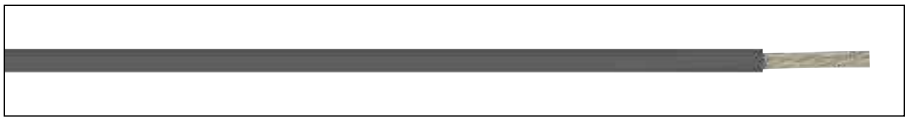
412190	20	19/32	0.098	2.49	45	1.14	0.350	8.9	81	121
387570	18	19/30	0.108	2.74	45	1.14	0.380	9.7	85	127
387070	16	19/29	0.114	2.90	45	1.14	0.390	9.9	106	158
412200	14	19/27	0.127	3.23	45	1.14	0.420	10.7	131	195
412210	12	19/25	0.146	3.71	45	1.14	0.465	11.8	176	262

Polyrad® ULTRA Wire

600 V, Single-Conductor, 125°C, Reduced Weight, Smaller Diameter, Dual Wall

Through our wealth of experience in providing effective cabling solutions for challenging and hazardous environments, General Cable responds to yet another industry demand. As developments and opportunities in transit technology drive the adoption of more sophisticated train networks, available space decreases and becomes more costly. As a result, the transit industry is experiencing an increasing demand for the reduction of both size and weight of cabling systems. Polyrad® ULTRA wire offers better performance, reduced weight and smaller diameters, defining the next generation of cable, ideal where high-density cabling is required. Polyrad® ULTRA singles can be designed into multi-conductor constructions that are 600 Volt and rated 125˚C, ideal for high-density cabling applications.

UP TO 33% WEIGHT & SPACE SAVINGS



Product Construction:

Conductor:
- 22 AWG thru 10 AWG soft annealed tinned copper per ASTM B33, B8 and B172

Dual Insulation:
- Polyrad® ULTRA flame-retardant, low-smoke irradiated Cross-linked Polyolefin (XLPO)
- Cross-linked fluoropolymer

Print:
- GENERAL CABLE® (WC) POLYRAD® ULTRA 125˚C XXAWG 600 V

Options:
- Available in multi-conductor constructions
- Available in colors other than dark gray

Applications:
- Ideally suited for use where high-density cabling is required, as this wire offers both size and weight advantages
- Engineered and manufactured for both original equipment and retrofit use in electronics equipment

Applications (cont'd):
- Utilized where environmental factors require wire characteristics to perform with a high degree of flame retardancy and excellent moisture-stable electrical values. Where reliability is the major concern and where maximum performance will be demanded
- For use on all types of heavy- and light-rail cars, rapid transit cars and diesel-electric locomotives

Features:
- Reduced diameter and lighter-weight transit wire — up to 33% smaller in diameter and lighter in weight than conventional Polyrad® XT 600 V
- Temperature rating at 125ºC for long life, higher ampacities and protection from thermal overloads
- Outstanding thermal stability at elevated temperatures
- Maximum flame retardance
- Excellent low-temperature performance; suitable for installation in sub-zero conditions

Features (cont'd):
- Extra-tough, mechanically rugged irradiated thermoset insulation
- Resistant to most oils and chemicals
- Meets cold bend test at –55ºC

Compliances:

Industry:
- ICEA S-95-658
- RoHS Compliant

Flame Test:
- IEEE 1202 (70,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- VW-1

Other:
- BSS 7239
- SMP 800-C
- ASTM E662
- NFPA 130 STD 2010
- ASTM 1354

Packaging:
- Standard reel put-up

POLYRAD® ULTRA 600 V

CATALOG NUMBER	CONDUCTOR (AWG) SIZE AND STRANDING		NOMINAL CONDUCTOR DIAMETER		NOMINAL INSULATION THICKNESS		NOMINAL JACKET THICKNESS		COPPER WEIGHT		NOMINAL CABLE DIAMETER		NET CABLE WEIGHT		AMPACITY (FREE AIR 40˚C AMBIENT)
			INCHES	mm	MILS	mm	MILS	mm	LBS./ 1000'	kg/km	INCHES	mm	LBS./ 1000'	kg/km	125˚C
369550	22	19/34	0.030	0.76	10	0.254	5	0.127	2	3	0.060	1.53	4	6	14
369560	20	19/32	0.038	0.97	10	0.254	5	0.127	4	6	0.068	1.73	6	9	17
369570	18	19/30	0.048	1.22	10	0.254	5	0.127	6	9	0.078	1.98	8	12	19
369580	16	19/29	0.054	1.37	10	0.254	5	0.127	8	12	0.084	2.13	10	15	25
369590	14	19/27	0.067	1.70	10	0.254	5	0.127	12	18	0.097	2.46	15	22	42
369600	12	19/25	0.086	2.18	10	0.254	5	0.127	19	28	0.116	2.95	23	34	55
369610	10	65/28	0.111	2.82	10	0.254	5	0.127	33	49	0.141	3.58	37	55	72

Dimensions and weights are nominal; subject to industry tolerances.

Color Code Chart

(Including but not limited to)

ORDERING SUFFIX	COLOR	ORDERING SUFFIX	COLOR
00	Dark Gray	05	Green
02	Red	08	Light Gray
04	Yellow	09	White

POLYRAD®

RoHS Compliant Directive 2011/65/EU

General Cable

Phone: 866.248.7060
www.generalcable.com

Polyrad® ULTRA Multi-Conductor Cable

600 V, 125°C, Shielded or Non-Shielded

Through a wealth of experience providing effective cabling solutions for challenging and hazardous environments, General Cable responds to yet another industry demand by defining the next generation of cable — Polyrad® ULTRA. As developments and opportunities in transit technology drive the adoption of more sophisticated transit infrastructures, available space decreases. Consequently, the transit industry is experiencing an increasing demand for reduced size and weight of cabling systems. Ideal wherever space is at a premium and high-density cabling is required, Polyrad® ULTRA cables offer better performance, reduced weight and smaller diameters. Polyrad® ULTRA singles are designed into multi-conductor 600 Volt constructions rated at 125°C to meet a variety of high-density cabling applications.

Product Construction:

Conductor:
- 22 AWG thru 10 AWG soft annealed tinned copper per ASTM B33, B8 and B172

Insulation:
- Polyrad® ULTRA flame-retardant, low-smoke irradiated Cross-linked Polyolefin (XLPO)
- Cross-linked fluoropolymer

Shield Options:
- Tinned copper braid
- Foil with drain wire
- Non-shielded

Jacket:
- Polyrad® XT flame-retardant, low-smoke irradiated Cross-linked Polyolefin (XLPO)

Print (Including but not limited to):
- GENERAL CABLE® (WC) POLYRAD® ULTRA XX/COND XXAWG SHIELDED 125°C 600 V YEAR/MONTH

Options:
- Available in E1, E2 or Method 4 color codes

Applications:
- Ideally suited for use where high-density cabling is required, as these cables offer both size and weight advantages
- Engineered and manufactured for both original equipment and retrofit use in electronic equipment
- Utilized where environmental factors require cable characteristics to perform with a high degree of flame retardancy and excellent moisture-stable electrical values. Where reliability is the major concern and where maximum performance will be demanded
- For use on all types of heavy- and light-rail cars, rapid transit cars and diesel-electric locomotives

Features:
- Reduced diameter and lighter-weight transit cable - 25% smaller in diameter and lighter in weight than conventional Polyrad® XT 600 V
- Temperature rating at 125°C for long life, higher ampacities and protection from terminal overloads
- Higher ampacities and simplified installations possible due to small outside diameters, flexible stranding and insulation

The multi-conductor cables shown in the following tables are merely a sampling of General Cable's wide range of products. Other conductor sizes, designs and/or specific installation requirements are available to meet virtually all the cabling needs of the transit and locomotive industry. For more information, contact General Cable's Transit inside sales at info@generalcable.com.

Features (cont'd.):
- Outstanding thermal stability at elevated temperatures
- Maximum flame retardance
- Excellent low-temperature performance; suitable for installation in sub-zero conditions
- Extra-tough, mechanically rugged irradiated thermoset insulation and jacket
- Resistant to most oils and chemicals

Compliances:

Industry:
- ICEA S-95-658
- RoHS Compliant

Compliances: (cont'd.):

Flame Test:
- IEEE 1202 (70,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- VW-1

Other:
- BSS 7239
- SMP 800-C
- ASTM E662
- NFPA 130 STD 2010

Packaging:
- Standard reel put-up

TWO CONDUCTOR POLYRAD® ULTRA NON-SHIELDED

CATALOG NUMBER	AWG		INSULATED DIAMETER		JACKET THICKNESS		CABLE DIAMETER		NET CABLE WEIGHT	
	SIZE	STRANDING	INCHES	mm	MILS	mm	INCHES	mm	LBS./1000'	kg/km
398540	22	19/34	0.060	1.53	20	0.51	0.165	4.2	14	21
398550	20	19/32	0.068	1.73	20	0.51	0.180	4.6	18	27
398560	18	19/30	0.078	1.98	20	0.51	0.200	5.1	23	34
387700	16	19/29	0.084	2.13	20	0.51	0.215	5.5	28	42
398570	14	19/27	0.097	2.46	20	0.51	0.240	6.1	39	58
398580	12	19/25	0.116	2.95	20	0.51	0.275	7.0	56	83
398590	10	65/28	0.147	3.81	20	0.51	0.345	8.8	88	131
TWO CONDUCTOR POLYRAD® ULTRA SHIELDED - 36 AWG TINNED COPPER BRAID - 85% MINIMUM COVERAGE										
398600	22	19/34	0.060	1.53	20	0.51	0.185	4.7	23	34
398610	20	19/32	0.068	1.73	20	0.51	0.200	5.1	30	45
398620	18	19/30	0.078	1.98	20	0.51	0.220	5.6	36	54
387710	16	19/29	0.084	2.13	20	0.51	0.235	6.0	42	61
398630	14	19/27	0.097	2.46	20	0.51	0.260	6.6	54	80
398640	12	19/25	0.116	2.95	20	0.51	0.300	7.6	73	109
398650	10	65/28	0.147	3.81	20	0.51	0.365	9.3	112	167
THREE CONDUCTOR POLYRAD® ULTRA NON-SHIELDED										
398660	22	19/34	0.060	1.53	20	0.51	0.175	4.5	19	28
398670	20	19/32	0.068	1.73	20	0.51	0.190	4.8	25	37
398680	18	19/30	0.078	1.98	20	0.51	0.210	5.3	32	48
398690	16	19/29	0.084	2.13	20	0.51	0.225	5.7	38	57
398700	14	19/27	0.097	2.46	20	0.51	0.250	6.4	52	77
398710	12	19/25	0.116	2.95	20	0.51	0.290	7.4	78	116
398720	10	65/28	0.147	3.81	20	0.51	0.360	9.2	127	189
THREE CONDUCTOR POLYRAD® ULTRA SHIELDED - 36 AWG TINNED COPPER BRAID - 85% MINIMUM COVERAGE										
398730	22	19/34	0.060	1.53	20	0.51	0.195	5.0	29	43
398740	20	19/32	0.068	1.73	20	0.51	0.210	5.3	37	55
387730	18	19/30	0.078	1.98	20	0.51	0.235	6.0	45	67
398750	16	19/29	0.084	2.13	20	0.51	0.245	6.2	52	77
398760	14	19/27	0.097	2.46	20	0.51	0.275	7.0	69	103
398770	12	19/25	0.116	2.95	20	0.51	0.315	8.0	96	143
398780	10	65/28	0.147	3.81	20	0.51	0.385	9.8	149	222

General Cable
Phone: 866.248.7060
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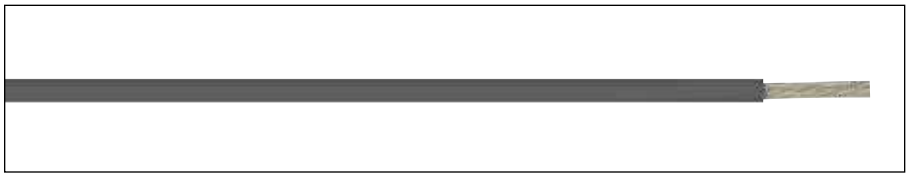
POLYRAD®

Polyrad® XT-TX Flexible Wire and Cable

600 V, Single-Conductor, NYCT Type TX



POLYRAD® XT-TX 600 V

CATALOG NUMBER	NYCT TYPE TX STOCK CODE NUMBER	CONDUCTOR (AWG/kcmil) SIZE AND STRANDING		NOMINAL CONDUCTOR DIAMETER		MINIMUM AVERAGE INSULATION THICKNESS		NOMINAL CABLE DIAMETER		COPPER WEIGHT		NET CABLE WEIGHT		AMPACITY (FREE AIR 40°C AMBIENT)
				INCHES	mm	MILS	mm	INCHES	mm	LBS./ 1000'	kg/ km	LBS./ 1000'	kg/ km	110°C
389980	*	20	19/32	0.038	0.97	30	0.76	0.100	2.54	4	6	9	13	15
389990	20-88-150X	18	19/30	0.048	1.22	30	0.76	0.110	2.79	6	9	12	18	17
389740	20-88-170X	16	19/29	0.054	1.37	30	0.76	0.116	2.95	8	13	13	19	23
390000	20-88-190X	14	19/27	0.067	1.70	30	0.76	0.129	3.28	12	18	18	27	39
390010	20-88-210X	12	19/25	0.086	2.18	30	0.76	0.148	3.76	19	28	27	40	51
390020	20-88-230X	10	27/24	0.117	2.97	30	0.76	0.179	4.55	34	50	43	64	67
390030	20-88-250X	8	37/24	0.135	3.43	45	1.14	1.227	5.77	47	70	63	94	85
390040	20-88-270X	6	61/24	0.174	4.42	45	1.14	0.266	6.75	76	114	97	144	120
390050	*	5	91/24	0.242	6.15	45	1.14	0.334	8.48	116	173	141	210	151
390060	20-88-290X	4	105/24	0.262	6.65	45	1.14	0.354	8.99	137	204	164	244	160
390070	20-88-310X	3	125/24	0.285	7.24	45	1.14	0.377	9.58	167	249	193	287	199
390080	20-88-330X	2	150/24	0.307	7.80	45	1.14	0.399	10.14	190	283	220	327	214
390090	20-88-380X	1	225/24	0.380	9.65	55	1.40	0.494	12.55	287	427	349	519	247
390100	*	1/0	275/24	0.410	10.41	55	1.40	0.524	13.31	351	522	417	621	286
390110	*	2/0	325/24	0.470	11.94	55	1.40	0.584	14.83	407	606	474	705	329
390120	*	3/0	450/24	0.549	13.94	55	1.40	0.663	16.84	594	884	655	975	380
390130	20-88-460X	4/0	550/24	0.593	15.06	55	1.40	0.707	17.96	696	1036	774	1152	446

Dimensions and weights are nominal; subject to industry tolerances.

Note: At the option of the purchaser, the manufacturer's standard type of stranding will be acceptable, providing that the conductor diameter does not exceed the values shown. The total number of wires shall be as specified, plus or minus one percent, except 150/24 which may vary by minus two percent, providing that the conductor diameter does not exceed the values shown.

*Sizes without NYCT Type TX stock code numbers are not listed in the NYCT TX specification.

Color Code Chart

(Including but not limited to)

ORDERING SUFFIX	COLOR	ORDERING SUFFIX	COLOR
00	Dark Gray	05	Green
02	Red	08	Light Gray
04	Yellow	09	White

Product Construction:

Conductor:
- 20 AWG thru 4/0 AWG soft annealed tinned copper per ASTM B33, B8 and B172

Insulation:
- Polyrad® XT flame-retardant, low-smoke irradiated Cross-linked Polyolefin (XLPO)

Print:
- GENERAL CABLE® (WC) POLYRAD® XT-TX 1/C XXAWG 600 V NYCT TX 20-88-XXXX DAY/MONTH/YEAR XXXX = NYCT TX Stock Code - last x is used to identify insulation color as listed below: 0 = Black, 1 = White, 2 = Red, 3 = Blue, 4 = Green, 5 = Orange, 6 = Yellow, 7 = Gray, 8 = Brown, 9 = Purple

Options:
- Available in multi-conductor constructions
- Available in colors other than dark gray

Applications:
- Ideally suited for use where environmental factors require cable characteristics to perform with a high degree of flame retardancy and excellent moisture-stable electrical values. Where reliability is the major concern and where maximum performance will be demanded
- Engineered and manufactured for both original equipment and retrofit use in power and control circuits and in motor leads
- Extensively found on all types of heavy- and light-rail cars, rapid transit cars, diesel-electric locomotives, freight cars and off-road vehicles

Features:
- Cables meet NYCT TX specification
- Temperature rating at 110°C
- Excellent flexibility & free stripping
- Outstanding thermal stability at elevated temperatures
- Maximum flame retardance and low toxicity
- Excellent low-temperature performance; suitable for installation in sub-zero conditions
- Extra-tough, mechanically rugged irradiated thermoset insulation
- Resistant to most oils and chemicals
- Meets cold bend test at –55°C
- Meets cold impact test at –40°C

Compliances:

Industry:
- AAR S-501/AAR RP-585
- ICEA S-95-658

Flame Test:
- IEEE 1202 (70,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- VW-1

Other:
- Meets NYCT TX specification
- BSS 7239
- SMP 800-C
- ASTM E662
- NFPA 130 STD 2010

Packaging:
- Standard reel put-up

POLYRAD®

General Cable

Phone: 866.248.7060
www.generalcable.com

Polyrad® XT-TX Flexible Wire and Cable

2000 V, Single-Conductor, NYCT Type TX

Product Construction:

Conductor:
- 20 AWG thru 535 kcmil soft annealed tinned copper per ASTM B33, B8 and B172

Insulation:
- Polyrad® XT flame-retardant, low-smoke irradiated Cross-linked Polyolefin (XLPO)

Print:
- GENERAL CABLE® (WC) POLYRAD® XT-TX 1/C XXAWG 2000 V NYCT TX 20-90-XXXX DAY/MONTH/YEAR XXXX = NYCT TX Stock Code - last x is used to identify insulation color as listed below: 0 = Black, 1 = White, 2 = Red, 3 = Blue, 4 = Green, 5 = Orange, 6 = Yellow, 7 = Gray, 8 = Brown, 9 = Purple

Options:
- Available in colors other than dark gray

Applications:
- Ideally suited for use where environmental factors require cable characteristics to perform with a high degree of flame retardancy and excellent moisture-stable electrical values. Where reliability is the major concern and where maximum performance will be demanded
- Engineered and manufactured for both original equipment and retrofit use in power and control circuits and in motor leads
- Extensively found on all types of heavy- and light-rail cars, rapid transit cars, diesel-electric locomotives, freight cars and off-road vehicles

Features:
- Cables meet NYCT TX specification
- Temperature rating at 110°C
- Excellent flexibility and free stripping
- Outstanding thermal stability at elevated temperatures
- Maximum flame retardance and low toxicity
- Excellent low-temperature performance; suitable for installation in sub-zero conditions
- Extra-tough, mechanically rugged irradiated thermoset insulation
- Resistant to most oils and chemicals
- Meets cold bend test at –55°C
- Meets cold impact test at –40°C

Compliances:

Industry:
- AAR S-501/AAR RP-585
- ICEA S-95-658

Flame Test:
- IEEE 1202 (70,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- VW-1

Other:
- Meets NYCT TX specification
- BSS 7239
- SMP 800-C
- ASTM E662
- NFPA 130 STD 2010

Packaging:
- Standard reel put-up

POLYRAD® XT-TX 2000 V

CATALOG NUMBER	NYCT TYPE TX STOCK CODE NUMBER	CONDUCTOR (AWG/kcmil) SIZE AND STRANDING		NOMINAL CONDUCTOR DIAMETER		MINIMUM AVERAGE INSULATION THICKNESS		NOMINAL CABLE DIAMETER		COPPER WEIGHT		NET CABLE WEIGHT		AMPACITY (FREE AIR 40°C AMBIENT)
				INCHES	mm	MILS	mm	INCHES	mm	LBS./ 1000'	kg/ km	LBS./ 1000'	kg/ km	110°C
390500	*	20	19/32	0.038	0.97	45	1.14	0.130	3.30	4	6	11	16	15
390140	20-90-160X	18	19/30	0.048	1.22	45	1.14	0.140	3.56	6	9	15	22	17
390150	20-90-180X	16	19/29	0.054	1.37	45	1.14	0.146	3.71	8	13	17	25	23
390160	20-90-200X	14	19/27	0.067	1.70	45	1.14	0.159	4.04	12	18	23	34	39
390170	20-90-220X	12	19/25	0.086	2.18	45	1.14	0.178	4.52	19	28	32	48	51
390180	20-90-240X	10	27/24	0.117	2.97	45	1.14	0.209	5.31	34	50	49	73	67
390190	20-90-260X	8	37/24	0.135	3.43	55	1.40	0.249	6.33	47	70	68	101	85
390200	20-90-280X	6	61/24	0.174	4.60	55	1.40	0.288	7.32	76	114	104	155	120
390210	*	5	91/24	0.242	6.15	55	1.40	0.356	9.04	116	173	149	222	151
390220	20-90-320X	4	105/24	0.262	6.65	55	1.40	0.376	9.55	137	204	172	256	160
390230	20-90-340X	3	125/24	0.285	7.24	55	1.40	0.399	10.14	167	249	201	299	199
390240	20-90-360X	2	150/24	0.307	7.80	55	1.40	0.421	10.69	190	283	230	343	214
390250	20-90-380X	1	225/24	0.380	9.65	65	1.65	0.514	13.06	287	427	357	531	247
390260	20-90-400X	1/0	275/24	0.410	10.41	65	1.65	0.544	13.82	351	522	424	631	286
389730	20-90-420X	2/0	325/24	0.470	11.94	65	1.65	0.604	15.34	407	606	485	722	329
390270	20-90-440X	3/0	450/24	0.549	13.94	65	1.65	0.683	17.35	594	884	667	993	380
390280	20-90-460X	4/0	550/24	0.593	15.06	65	1.65	0.727	18.47	696	1036	796	1185	446
390290	20-90-480X	262	650/24	0.630	16.00	105	2.67	0.844	21.44	820	1220	936	1393	524
389750	20-90-500X	313	775/24	0.685	17.40	105	2.67	0.899	26.30	987	1469	1113	1656	590
390300	20-90-520X	373	925/24	0.750	19.05	105	2.67	0.964	24.49	1176	1750	1315	1957	657
390310	20-90-540X	444	1100/24	0.820	20.83	105	2.67	1.034	26.26	1413	2103	1566	2330	734
390320	20-90-560X	535	1325/24	0.895	22.73	105	2.67	1.109	28.17	1697	2525	1894	2819	828

Dimensions and weights are nominal; subject to industry tolerances.

Note: At the option of the purchaser, the manufacturer's standard type of stranding will be acceptable, providing that the conductor diameter does not exceed the values shown. The total number of wires shall be as specified, plus or minus one percent, except 150/24 which may vary by minus two percent, providing that the conductor diameter does not exceed the values shown.

*Sizes without NYCT Type TX stock code numbers are not listed in the NYCT TX specification.

Color Code Chart

(Including but not limited to)

ORDERING SUFFIX	COLOR	ORDERING SUFFIX	COLOR
00	Dark Gray	05	Green
02	Red	08	Light Gray
04	Yellow	09	White

Transit Data Communications Cables 2

POLYRAD®

Category 5e Shielded Cable

4 Pair, 24 AWG, TIA/EIA 568-C.2 Patch

Product Construction:

Conductor:
- 4 pair, 24 AWG 7/32 tinned copper: Diameter: .024"

Insulation:
- Polyolefin: Diameter: .047"

Pairs:
- Two conductors twisted together (each pair twisted with a different lay length)
- Color code:
  P1: White/Blue, Blue
  P3: White/Green, Green
  P2: White/Orange, Orange
  P4: White/Brown, Brown

Binding:
- Polyester tape, 25% min. lap.

Inner Shield:
- Aluminum/polyester tape, 100% coverage

Outer Shield:
- Tinned copper braid, 80% coverage

Jacket:
- Polyrad® XT flame-retardant, low-smoke, irradiated Cross-linked Polyolefin (XLPO), .025" wall, Dark Gray: Diameter: .300"

Print (Including but not limited to):
- GENERAL CABLE® (F) LO24P0045664-5E 4PR/24 AWG SFTP CAT5E PATCH AAAAA* MO/YR** XXXXXX FT***
  *Order number
  **Date
  ***Footage markings every 2 ft

Applications:
- For high-speed data transmission. Tested to 100 MHz
- Category 5e construction is suitable for use in transit applications with flexible stranding, overall shield and a Polyrad® XT jacket

Features:
- Meets Category 5e electricals

Compliances:

Industry:
- TIA/EIA 568-C.2 Patch

Flame Test:
- 49 CFR Part 238 Appendix B for low-voltage wire and cable
- NYCT Type TX Test 11 per ICEA S-95-658-1999
- Type B per AAR RP-585 Paragraph 5.9.6

Other:
- BSS 7239
- ASTM E662

TRANSIT, 4 PAIR/24 AWG, SHIELDED FOIL TWISTED PAIR (SFTP) CAT 5e, LOW SMOKE

CATALOG NUMBER	# OF PAIRS	COND. SIZE AWG	NOMINAL INSULATION O.D. INCHES	NOMINAL JACKET THICKNESS INCHES	NOMINAL CABLE DIAMETER INCHES
LO24P0045664-5e	4	24 AWG 7/32	0.047	0.025	0.300

ELECTRICAL CHARACTERISTICS

FREQUENCY (MHz)	INSERTION LOSS (dB/100 m) max.	NEXT (dB) min.	ACRF (dB) min.	RL (dB) min.
1	2.4	65.3	63.8	20.0
4	4.9	56.3	51.8	23.0
8	6.9	51.8	45.7	24.5
10	7.8	50.3	43.8	25.0
16	9.9	47.2	39.7	25.0
20	11.1	45.8	37.8	25.0
25	12.5	44.3	35.8	24.2
31.25	14.1	42.9	33.9	23.3
62.5	20.4	38.4	27.9	20.7
100	26.4	35.3	23.8	19.0

DC Resistance:	9.38 Ω /100 m (28.6 Ω/kft) Max.
DCR Unbalanced:	5% Max.
Mutual Capacitance:	55.8 pF/m (17 pF/ft) Max.
Capacitance Unbalanced:	330 pF/100 m (1 pF/ft) Max.
Characteristic Impedance:	100 Ω +/- 15 Ω (1-100 MHz)
Prop Delay (Skew):	45 ns/100 m Max.
Velocity of Propagation:	72% Nom.
Temp. & Voltage Rating:	-55˚C to +75˚C / 600 V Max.

Category 5e Quad Shielded Cable

4 Conductor, 22 AWG, TIA/EIA 568-C.2 Patch

TRANSIT, 4 CONDUCTOR/22 AWG, SHIELDED FOIL CAT 5e, LOW-SMOKE

CATALOG NUMBER	# OF COND.	COND. SIZE	NOMINAL INSULATION O.D.	NOMINAL JACKET THICKNESS	NOMINAL CABLE DIAMETER
		AWG	INCHES	INCHES	INCHES
LO22C0045664	4	22 AWG 7/30	0.076	0.035	0.275

ELECTRICAL CHARACTERISTICS

FREQUENCY (MHz)	INSERTION LOSS (dB/100 m) max.	NEXT (dB) min.	ACRF (dB) min.	RL (dB) min.
1	2.4	65.3	63.8	20.0
4	4.9	56.3	51.8	23.0
8	6.9	51.8	45.7	24.5
10	7.8	50.3	43.8	25.0
16	9.9	47.2	39.7	25.0
20	11.1	45.8	37.8	25.0
25	12.5	44.3	35.8	24.2
31.25	14.1	42.9	33.9	23.3
62.5	20.4	38.4	27.9	20.7
100	26.4	35.3	23.8	19.0

DC Resistance:	9.38 Ω /100 m (28.6 Ω/kft) Max.
DCR Unbalanced:	5% Max.
Mutual Capacitance:	55.8 pF/m (17 pF/ft) Max.
Capacitance Unbalanced:	330 pF/100 m (1 pF/ft) Max.
Characteristic Impedance:	100 Ω +/- 15 Ω (1-100 MHz)
Prop Delay (Skew):	45 ns/100 m Max.
Velocity of Propagation:	72% Nom.
Temp. & Voltage Rating:	-55˚C to +75˚C / 600 V Max.

Product Construction:

Conductor:
- 4 conductor, 22 AWG 7/30 tinned copper: Diameter: .030”

Insulation:
- Polyolefin: Diameter: .047"

Color Code:
Conductor 1: White
Conductor 2: Blue
Conductor 3: Yellow
Conductor 4: Orange

Inner Shield:
- Aluminum/polyester tape, 100% coverage

Outer Shield:
- Tinned copper braid, 95% coverage

Jacket:
- Flame-retardant, low-smoke, irradiated Cross-linked Polyolefin (XLPO), .035" wall, Dark Gray: Diameter: .275"

Print (Including but not limited to):
- GENERAL CABLE LO22C0045664 4 CDR 22 AWG CAT 5E 100MHZ DATA CABLE NFPA130 2010
  600 V XXXX FEET MO/YR

Applications:
- For high-speed data transmission. Tested to 100 MHz
- Category 5e construction is suitable for use in transit applications with flexible stranding, overall shield and a low-smoke, irradiated Cross-linked Polyolefin jacket

Features:
- Meets Category 5e electricals

Compliances:

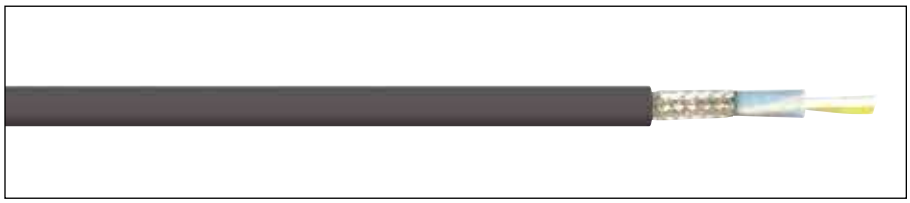
Industry:
- TIA/EIA 568-C.2 Patch

Flame Test:
- 49 CFR Part 238 Appendix B for low-voltage wire and cable

Other:
- NFPA 130 STD 2010
- ASTM E662
- BSS 7239

Polyrad® XT Transit Data Communications Cables

General Cable offers a wide variety of transit data communications cables that meet UL 1581 VW-1 flammability requirements, ASTM E662 smoke density, and Boeing BSS 7239 and Bombardier SMP 800-C toxicity standards. Transit data communications cables are produced in multi-conductors, coaxial, and shielded twisted pairs. Our high-quality products are engineered with outstanding thermal stability at elevated temperatures as well as excellent performance in sub-zero conditions. An extra-tough irradiated thermoset jacket provides resistance to most oils, chemicals, and moisture but still allows for flexibility and free stripping. General Cable also has the ability to design products specifically catered to individual customer needs and requirements.



Product Construction:

Conductor:
- 20 AWG thru 12 AWG soft annealed tinned copper per ASTM B33, B8 and B172

Insulation:
- Low-smoke irradiated Cross-linked Polyolefin (XLPO)

Jacket
- Polyrad® XT flame-retardant, low-smoke irradiated Cross-linked Polyolefin (XLPO)

Print (Including but not limited to):
- GENERAL CABLE® (WC) POLYRAD® XT XX/COND XXAWG SHIELDED XXX OHM 110˚C 600 V YEAR/MONTH

Options:
- Other data communications cables available upon request

Applications:
- Ideally suited for use where specific and stable electrical values are required
- Engineered and manufactured for both original equipment and retrofit use in electronic equipment

Features:
- Excellent flexibility and free stripping
- Outstanding thermal stability at elevated temperatures
- Excellent low-temperature performance; suitable for installation in sub-zero conditions
- Extra-tough, mechanically rugged irradiated thermoset jacket
- Resistant to most oils and chemicals

Compliances:

Industry:
- RoHS Compliant

Flame Test:
- VW-1

Other:
- BSS 7239
- SMP 800-C
- ASTM E662

Packaging:
- Standard reel put-up

The data communications cables shown in the following tables are merely a sampling of General Cable's wide range of products. Other conductor sizes, designs and/or specific installation requirements are available to meet virtually all the cabling needs of the transit and locomotive industry. For more information, contact General Cable's Transit inside sales at info@generalcable.com.

100 OHM SHIELDED DATA CABLE

CATALOG NUMBER	AWG		NUMBER OF CONDUCTORS	INSULATED DIAMETER		JACKET THICKNESS		CABLE DIAMETER		NET CABLE WEIGHT	
	SIZE	STRANDING		INCHES	mm	MILS	mm	INCHES	mm	LBS./1000'	kg/km
387090	20	19/32	2	0.092	2.34	45	1.14	0.305	8.0	55	82
Shield: 36 AWG Tinned Copper Braid - 95% Minimum Coverage										Color Code: Yellow, White	
387550	16	19/29	2	0.154	3.91	45	1.14	0.425	10.8	63	150
Shield: 36 AWG Tinned Copper Braid - 95% Minimum Coverage + Aluminum/Mylar Tape										Color Code: Yellow, White	

120 OHM SHIELDED DATA CABLE

329960	20	19/32	2	0.114	2.90	45	1.14	0.342	8.7	62	92
Shield: 36 AWG Tinned Copper Braid - 90% Minimum Coverage										Color Code: Black, White	
387540	18	19/30	2	0.173	4.40	45	1.14	0.460	11.7	99	147
Shield: 36 AWG Tinned Copper Braid - 95% Minimum Coverage + Aluminum/Mylar Tape										Color Code: Yellow, White	
388500	18	19/30	3	0.173	4.40	45	1.14	0.470	11.9	83	124
Shield: Aluminum/Mylar Tape + 22 AWG 7/30 Tinned Copper Drain Wire										Color Code: White, Red, Green	
329950	16	19/29	2	0.164	4.17	45	1.14	0.446	11.3	92	137
Shield: 36 AWG Tinned Copper Braid - 95% Minimum Coverage + Aluminum/Mylar Tape										Color Code: Yellow, White	
388610	20	19/32	2/Pair	0.108	2.74	45	1.14	0.510	13.0	111	165
Shield: 36 AWG Tinned Copper Braid - 90% Minimum Coverage + Aluminum/Mylar Tape										Color Code: White, Blue + Red, Black	

RoHS Compliant
Directive 2011/65/EU

POLYRAD®

Transit Specialty Cables

3

Diesel Locomotive Cable 2000 Volts (EPR/XL-CPE)

SPEC 5310
May, 2012

UL RHH/RHW-2 2000 V and c(UL) RW90 1000 V
Flexible, Oil-, Sunlight- and Ozone-Resistant, Flame-Retardant, -40°C to 90°C

Product Construction:

Conductor:
- 14 AWG (2.08 mm) thru 1111.1 kcmil (562 mm) Class I fully annealed flexible stranded tin coated copper per AAR 589

Insulation:
- Flame-retardant, lead-free cross-linked Ethylene Propylene (EP) with separator tape over the conductor to facilitate stripping

Jacket:
- Black, flame-retardant, sunlight-, ozone- and oil-resistant, lead-free Cross-linked Chlorinated Polyethylene (XL-CPE)

Print:
- GENERAL CABLE® (MFG LOCATION) DIESEL LOCOMOTIVE 2000 V P-07-KA120005-MSHA C(UL)US TYPE RHH OR RHW-2 VW-1 (SIZE) AWG/kcmil (MM²) EP FOR CT USE* SR -40°C FT4 OR RW90 EP 1000 V ROHS MONTH/YEAR OF MFG SEQUENTIAL FOOTAGE MARK

  *Applicable for sizes 1/0 AWG and larger only

Options:
- Fully annealed, flexible bare copper stranding per AAR 589
- Other jacket colors available upon request

Applications:
- For use up to 2000 V as power cables in wind turbine generator applications per UL Subject 6140
- Diesel electric locomotives
- Mining and earth-moving equipment
- General purpose use as flexible power leads

Applications (cont'd.):
- Flexible power leads in cable trays in sizes 1/0 AWG and larger
- Accepted for listing as flame-resistant by MSHA

Features:
- Rated 90°C wet or dry per UL 44/CSA C.22.2-38
- Flexible tinned copper stranding
- Excellent resistance to oils, gear lubricants, ozone, sunlight, heat and flame
- Designed to withstand continuous flexing

Minimum Bend Radius:
- 8X O.D. for fixed installations or mobile applications

Torsion Requirements:
- +/-180° twists per meter for 5,000 cycles at -40°C with cable weight compensated to 18 meters

Compliances:

Industry Compliances:
- Type RHH/RHW-2 per UL 44, UL File # E90494
- c(UL)US Type RW90 per CSA C.22.2-38, UL File # E90494

Compliances (cont'd.):
- National Electrical Code (NEC)
- ICEA S-95-658/NEMA WC70
- "For CT Use" on 1/0 AWG and larger in accordance with NEC®
- Accepted for listing as flame resistant by MSHA
- RoHS Compliant

Flame Test Compliances:
- UL 2556 VW-1
- IEEE 1202/CSA FT4 for sizes 1/0 AWG and larger

AC Withstand Voltage Testing requirements per UL 44:

14 - 10 AWG	6000 V
8 - 2 AWG	7500 V
1 - 4/0 AWG	9000 V
262.6 kcmil - 444 kcmil	10000 V
535.3 kcmil - 929.9 kcmil	11000 V
1111.1 kcmil	13500 V

CATALOG NUMBER	COND. SIZE AWG/ kcmil	COND. SIZE mm²	COND. STRAND	NOMINAL COND. O.D. INCHES	NOMINAL COND. O.D. mm	NOM. INS. THICKNESS INCHES	NOM. INS. THICKNESS mm	JACKET THICKNESS INCHES	JACKET THICKNESS mm	NOMINAL O.D. INCHES	NOMINAL O.D. mm	APPROX. NET WEIGHT LBS/1000 FT	APPROX. NET WEIGHT kg/km
5310.01014	14	2.08	19/.0147	0.070	1.8	0.045	1.1	0.015	0.4	0.20	5.1	30	45
5310.01012	12	3.31	19/.0185	0.088	2.2	0.045	1.1	0.015	0.4	0.22	5.6	39	58
5310.01010	10	5.26	27/24	0.117	3.0	0.045	1.1	0.015	0.4	0.25	6.4	56	83
5310.01008	8	8.36	37/24	0.144	3.7	0.055	1.4	0.030	0.8	0.33	8.3	87	129
5310.01006	6	13.3	61/24	0.190	4.8	0.060	1.5	0.030	0.8	0.38	9.7	131	195
5310.01004	4	21.1	105/24	0.262	6.7	0.060	1.5	0.030	0.8	0.46	11.7	202	301
5310.01002	2	33.6	158/24	0.315	8.0	0.060	1.5	0.030	0.8	0.51	13.0	285	424
5310.01001	1	42.4	224/24	0.375	9.5	0.080	2.0	0.045	1.1	0.64	16.3	417	621
5310.01110	1/0	53.5	280/24	0.435	11.0	0.080	2.0	0.045	1.1	0.70	17.8	494	735
5310.01210	2/0	67.4	329/24	0.465	11.8	0.080	2.0	0.045	1.1	0.73	18.5	587	874
5310.01310	3/0	85	456/24	0.535	13.6	0.080	2.0	0.045	1.1	0.80	20.3	718	1069
5310.01410	4/0	107	551/24	0.581	14.8	0.080	2.0	0.045	1.1	0.84	21.3	845	1258
5310.01262	262.6	133	650/24	0.617	15.7	0.090	2.3	0.065	1.7	0.94	23.9	1050	1563
5310.01313	313.3	158	777/24	0.671	17.0	0.090	2.3	0.065	1.7	1.00	25.3	1195	1778
5310.01373	373.7	189	925/24	0.735	18.7	0.090	2.3	0.065	1.7	1.06	26.9	1384	2060
5310.01444	444.4	225	1110/24	0.786	20.0	0.090	2.3	0.065	1.7	1.11	28.2	1634	2432
5310.01535	535.3	271	1332/24	0.877	22.3	0.090	2.3	0.065	1.7	1.20	30.5	1925	2865
5310.01646	646.4	327	1609/24	0.960	24.4	0.090	2.3	0.065	1.7	1.29	32.8	2307	3433
5310.01777	777.7	394	1924/24	1.054	26.8	0.090	2.3	0.065	1.7	1.38	35.1	2728	4060
5310.01929*	929.9	475	2318/24	1.230	31.2	0.090	2.3	0.065	1.7	1.56	39.6	3570	5313
5310.01111*	1111.1	562	2745/24	1.328	33.7	0.115	2.9	0.095	2.4	1.77	44.9	4232	6298

* Non-stock item; minimum runs apply. Please consult Customer Service for price and delivery.

General Cable
Phone: 866.248.7060
www.generalcable.com

RoHS Compliant Directive 2011/65/EU

MSHA Mine Safety and Health Administration

c UL LISTED

UL LISTED

Electronically Controlled Pneumatic (ECP) Brake Cable

600 V, Two Conductor, Unarmored and Armored

ECP BRAKE CABLE

CATALOG NUMBER	NUMBER OF CONDUCTORS	CONDUCTOR (AWG) SIZE AND STRANDING		NOMINAL INSULATION THICKNESS		NOMINAL JACKET THICKNESS		NOMINAL CABLE DIAMETER		NET CABLE WEIGHT		AMPACITY (FREE AIR 40°C AMBIENT)
				MILS	mm	MILS	mm	INCHES	mm	LBS./ 1000'	kg/ km	125°C
282400	2	8	37/24	40	1.02	100	2.54	0.725	18.42	405	603	69
287940 (ARMORED)	2	8	37/24	40	1.02	100	2.54	0.960	24.38	730	1086	69

Product Construction:

Conductor:
- 8 AWG soft annealed tinned copper per ASTM B33

Insulation:
- Cross-linked Polyolefin (XLPO) - 125°C

Shield:
- 34 AWG tinned copper braid with drain wire

Jacket:
- Arctic-grade, heavy-duty reinforced Neoprene

Optional Armor:
- Galvanized steel or aluminum

Print:
- AAR ECP BRAKE CABLE S-4210 GENERAL CABLE® (WC) T-75128 2/C 8 AWG 600 V QUARTER/YEAR

Applications:
- Designed specifically for installation both under and between freight cars
- Meets all AAR specification S-4210 requirements

Features:
- 125°C rated Cross-linked Polyolefin (XLPO) insulation allows for routing through higher temperature areas. Insulation is also flexible and free stripping
- Tinned copper braided shield designed for significant EMI/RFI reduction
- Arctic-grade, heavy-duty reinforced neoprene jacket offers the lowest diameter for easier conduit pull and can be used in a ¾" conduit in lieu of 1". Excellent low-temperature performance suitable for installation in sub-zero conditions. Tough mechanical properties
- Optional galvanized or aluminum armor over the cable jacket allows for conduit-free installations providing significant installed cost savings
- Temperature range of -45°C to +100°C

Compliances:

Industry:
- AAR S-4210

Flame Test:
- IEEE 1202 (70,000 BTU/hr)
- IEEE 383 (70,000 BTU/hr)
- VW-1

TRANSPOWER Head-End Power (HEP) 600 V Cables

Single-Conductor, 4/0 AWG or Three Conductor, 10 AWG

Product Construction

Single-Conductor:
- 4/0 AWG 5320/34 Rope Bare Copper

Insulation:
- Thermoplastic Elastomer (TPE)

Jacket:
- Reinforced Neoprene – Black

Ampacity:
- 400 amps @ 30°C

Print:
- GENERAL CABLE® (WC) 600 VOLT 4/0 AWG

Product Construction

Three Conductors:
- 10 AWG 259/34 Tinned Copper

Insulation:
- Thermoplastic Elastomer (TPE)

Jacket:
- Neoprene – Black

Color Code:
- Black, White, Red

Print:
- GENERAL CABLE® (WC) 600 VOLT TRANSPOWER 3/C 10 AWG

Applications:
- Head-End Power cable used in jumper assemblies locomotive-to-locomotive, locomotive-to-car and car-to-car for transmission of 480 V, 3 phase 50/60 Hz
- Designed for heavy-duty service where severe flexing is encountered

Features:
- Rated at 600 V
- Normal operating temperature: -55°C to +90°C
- Extreme temperature resistance during molding operation: 375°F
- Excellent flexibility; withstands continuous vibrations
- Outstanding resistance to moisture, oils and fluids, abrasion, tearing, compression, ozone, sunlight, flame, and heat
- Bend radius:
  1/C 4/0 AWG: 3.5" minimum
  3/C 10 AWG: 2.75" minimum

Industry Compliances:
- Amtrak Specification: D-77-24
- ASTM B3
- ASTM B172
- UL Standard 62
- ICEA S-95-658/NEMA WC70

TRANSPOWER HEAD-END POWER (HEP) 600 V CABLES

CATALOG NUMBER	NUMBER OF CONDUCTORS	CONDUCTOR (AWG) SIZE AND STRANDING		NOMINAL INSULATION THICKNESS		NOMINAL JACKET THICKNESS		NOMINAL CABLE DIAMETER		NET CABLE WEIGHT		AMPACITY (FREE AIR 30°C AMBIENT)
				MILS	mm	MILS	mm	INCHES	mm	LBS./ 1000'	kg/ km	
650870.00.77	1	4/0	5320/34	60	1.52	85	2.16	0.885	22.5	872	1298	400
696420.00.77	3	10	259/34	47	1.19	93	2.36	0.685	17.4	338	503	40

Technical Information

4

Common Color Sequence

SPEC A100
May, 2013

Method 1 - Table E1 Color Sequence

COND. NO.	BACKGROUND OR BASE COLOR	FIRST TRACER COLOR	SECOND TRACER COLOR	COND. NO.	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 4 - All Conductors Black

COND.	CONDUCTOR PRINTING
1st	"1-One"
2nd	"2-Two"
3rd	"3-Three"
4th	"4-Four"
5th	"5-Five"

Method 1 - Table E2 Color Sequence

COND. NO.	BACKGROUND OR BASE COLOR	TRACER COLOR	COND. NO.	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.

ANSI MC 96.1 Conductor Alloy and Color Code

COND. TYPE	POSITIVE WIRE		NEGATIVE WIRE		OUTER JACKET
	ALLOY	COLOR	ALLOY	COLOR	
EX	Chromel	Purple	Constantan	Red	Purple
JX	Iron	White	Constantan	Red	Black
KX	Chromel	Yellow	Alumel	Red	Yellow
TX	Copper	Blue	Constantan	Red	Blue

Temperature Conversion Table

SPEC A125
October, 2011

Known temperature is in boldface type-**Temp (°F or °C)**. Corresponding temperature in degrees Fahrenheit will be found in the column to the right. Corresponding temperature in degrees Centigrade will be found in the column to the left.

-5 TO -100			0 TO 100						100 TO 500		
°C	Temp (°F or °C)	°F	°C	Temp (°F or °C)	°F	°C	Temp (°F or °C)	°F	°C	Temp (°F or °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**	87.7	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	Temp (°F or °C)	°F	°C	Temp (°F or °C)	°F	°C	Temp (°F or °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

Metric Conversion Factors

SPEC A150
September, 2010

	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 feet)	Kilometers	0.3048
	Kilometers	Kilofeet (1000 feet)	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/square meters

AWG (American Wire Gauge) to mm² (Millimeters Squared) Conversion

SPEC A186
October, 2011

AWG/KCMIL	Circ. Mils[1]	Cross-Sectional Area (mm²)
929	929,200	471
	789,410	400
777	777,700	394
750	750,000	380
646	646,400	327
600	600,000	304
	592,058	300
535	535,300	271
500	500,000	253
	473,646	240
444	444,400	225
400	400,000	203
373	373,700	187
	365,102	185
350	350,000	177
313	313,100	159
300	300,000	152
	296,029	150
262	262,600	133
250	250,000	127
	236,823	120
4/0	216,900	110
	187,485	95
3/0	174,800	89
	138,147	70

AWG/KCMIL	Circ. Mils[1]	Cross-Sectional Area (mm²)
2/0	134,200	68
1/0	108,350	55
	98,676	50
1	87,295	44
	69,073	35
2	63,480	32
	49,338	25
4	42,080	21
	31,576	16
6	25,440	12.9
	19,735	10.0
8	15,730	8.0
	11,841	6.0
10	10,645	5.4
	7,894	4.0
12	6,309	3.2
	4,934	2.50
14	3,970	2.04
	2,960	1.50
16	2,503	1.31
	1,974	1.00
18	1,760	0.82
	1,480	0.75
20	1,118	0.52
	987	0.50

[1] Circular Mil Area values are approximate and are provided as a reference guide.

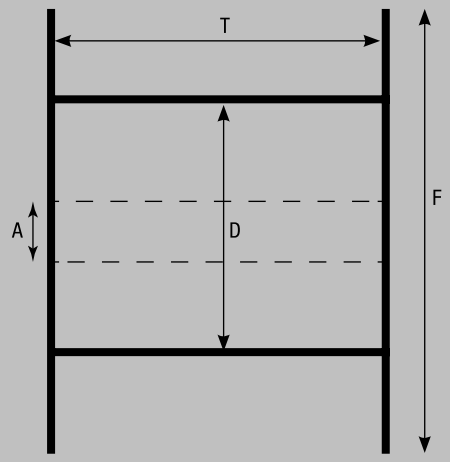
Reel Capacity Chart

SPEC A200
January, 2012

General Cable Phone: 866.248.7060
www.generalcable.com

WOOD REELS

Reel (FxTxD)	30x18x12	36x24x17	40x24x17	45x28x21	50x32x24	58x32x28	72x36x36	84x36x48	90x36x48
RM Code	61-1215	61-1659	61-1808	61-2056	61-2253	61-2764	61-3655	61-4265	61-4366
Arbor Hole	2.75	3.06	3.06	3.06	3.06	3.06	3.06	3.5	3.5
Drive Hole	1	1	1	1.5	1.5	1.5	1.5	1.5	1.5
Drive Hole Radius	4.5	6	6	8.5	10	10	10	10	10
Clearance	1.5	2	2	2	2	2	2	2	3
Factor	509.3	1155.4	1582.8	2274.2	3227.7	4468.6	7847.4	9658.4	11205.2
Max Weight	750	1500	2000	3000	4800	6500	8000	9000	10,000
Net Weight	47	91	110	142	208	271	513	744	821
Cable OD									
.241 - .250	11040								
.251 - .260	10200								
.261 - .270	9460								
.271 - .280	8800								
.281 - .290	8200								
.291 - .300	7660								
.301 - .310	7180								
.311 - .320	6740	10790							
.321 - .330	6330	10110							
.331 - .340	5970	9610							
.341 - .350	5630	9030							
.351 - .360	6320	8490							
.361 - .370	5040	8100							
.371 - .380	4780	7620	10520						
.381 - .390	4530	7300	9940						
.391 - .400	4310	6880	9540						
.401 - .410	4100	6600	9030						
.411 - .420	3910	6230	8550	12580					
.421 - .430	3730	6000	8220	11940					
.431 - .440	3560	5660	7790	11330					
.441 - .450	3410	5450	7510	10910					
.451 - .460	3260	5250	7120	10370	15010				
.461 - .470	3120	4970	6880	10000	14290				
.471 - .480	2990	4700	6530	9510	13790				
.481 - .490	2870	4630	6310	9180	13150				
.491 - .500	2760	4390	6110	8880	12700				
.501 - .525	2500	4040	5530	8050	11540				
.526 - .550	2280	3650	5030	7330	10510				
.551 - .575	2090	3310	4580	6680	9610				
.576 - .600	1920	3080	4180	6110	8800				
.601 - .625	1770	2810	3910	5590	8050				
.626 - .650	1630	2630	3580	5240	7430	10420			
.651 - .675	1510	2400	3280	4820	6970	9630			
.676 - .700	1410	2260	3090	4530	6430	8900			
.701 - .725	1310	2070	2840	4180	5940	8260			
.726 - .750	1230	1950	2690	3950	5610	7800			
.751 - .775	1150	1840	2480	3650	5190	7250			
.776 - .800	1080	1690	2350	3460	4920	6870			
.801 - .825	1010	1610	2230	3200	4670	6400	11530		
.826 - .850	950	1530	2060	3040	4340	6090	10860		
.851 - .875	900	1450	1970	2900	4130	5680	10250		
.876 - .900	850	1340	1880	2690	3850	5420	9690		
.901 - .925	810	1280	1735	2570	3670	5060	9170	11290	
.926 - .950	760	1220	1660	2460	3510	4840	8700	10700	
.951 - .975	730	1170	1590	2280	3270	4630	8250	10160	
.976 - 1.000	690	1075	1525	2190	3130	4340	7850	9660	11210
1.001 - 1.050	630	990	1360	2010	2880	3990	7120	8760	10160
1.051 - 1.100	570	910	1260	1800	2590	3600	6490	7980	9260
1.101 - 1.150	520	810	1120	1670	2400	3250	5930	7300	8470
1.151 - 1.200	480	750	1040	1500	2160	3030	5450	6710	7780
1.201 - 1.250	440	700	980	1400	2020	2740	5020	6180	7170
1.251 - 1.300	410	650	870	1310	1820	2570	4640	5720	6630
1.301 - 1.350	380	580	820	1180	1710	2410	4320	5300	6150
1.351 - 1.400	350	550	770	1110	1610	2190	4000	4930	5720
1.401 - 1.450	330	520	690	1040	1460	2070	3730	4590	5330
1.451 - 1.500	310	490	650	990	1370	1950	3490	4290	4980
1.501 - 1.600	270	410	590	840	1230	1690	3070	3770	4380
1.601 - 1.700	240	370	500	760	1060	1520	2720	3340	3880
1.701 - 1.800		330	450	650	960	1325	2420	2980	3460
1.801 - 1.900			420	600	880	1210	2170	2680	3100
1.091 - 2.000				540	760	1060	1960	2410	2800
2.001 - 2.100				500	700	970	1740	2190	2540
2.101 - 2.200					650	900	1620	2000	2320
2.201 - 2.300					600	790	1480	1830	2120
2.301 - 2.400					520	740	1360	1680	1950
2.401 - 2.500					490	690	1260	1550	1790
2.501 - 2.600					460	640	1160	1430	1660
2.601 - 2.700					430	600	1080	1320	1540
2.701 - 2.800						530	1000	1230	1430
2.801 - 2.900						500	930	1150	1330
2.901 - 3.000						470	870	1070	1250
3.001 - 3.100						440	820	1010	1170
3.101 - 3.200						420	770	940	1090
3.201 - 3.300						400	720	890	1030
3.301 - 3.400						380	680	840	970
3.401 - 3.500							640	790	910



F = Flange Diameter
T = Traverse Width
D = Drum Diameter
A = Arbor Hole

Flame Test Comparison

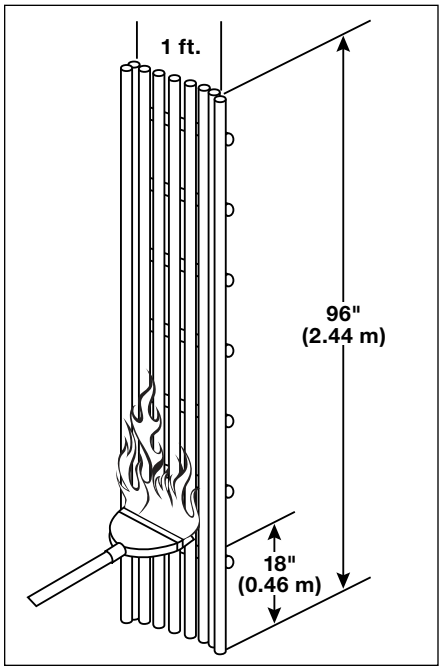
SPEC A210
October, 2011

The flammability of a cable is normally the ability of the material to cease burning once the source of heat is removed. Several tests have been formulated to measure this requirement.

UL FLAME TESTS

UL 1581 Vertical Tray Flame Test:

This test is conducted on cables lashed to a vertical metal ladder tray 8 feet in height. The combustion source is a ribbon burner with a flame temperature of approximately 1500°F which supplies 70,000 BTU of heat per hour. The flame application time is 20 minutes. This test requires the cable to self-extinguish prior to reaching the top of the tray which is 8 feet in height. A UL Type TC (Tray-Rated) cable must meet this test. UL 1581 is an equivalent test for IEEE 383-1974.



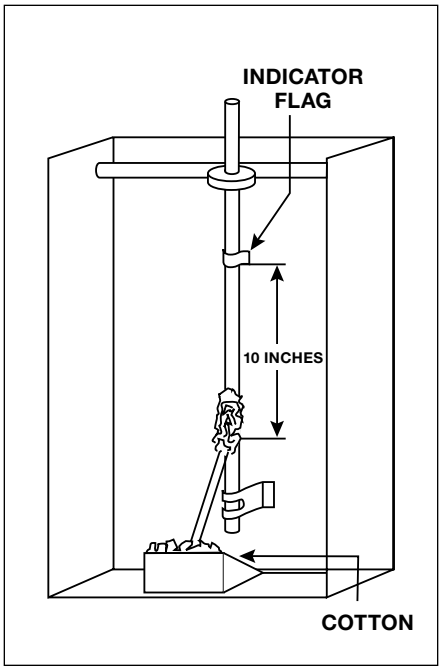
UL 1581 Vertical Tray Flame Test

UL 1581 VW-1 Vertical Wire Flame Test:

This is a small-scale test conducted on a single 24" length of wire. The flame source is a Tirrill burner (similar to a Bunsen burner) with a heat output of approximately 3,000 BTU per hour. The flame is applied for 15 seconds and then is reapplied four more times. If the sample burns longer than 60 seconds after any application, or if the indicator flag or the cotton laid below the wire is ignited during the test, the cable fails the test.

Per AAR RP-585 – Application of the flame shall be 5 times with 15-second rest periods with 10 seconds maximum burn after each flame application.

Per NYCT - Application of the flame shall be 5 times with 15-second rest periods with 3 seconds maximum burn after each flame application.



UL 1581 VW-1 Flame Test

IEEE FLAME TESTS

IEEE 1202

This test is conducted on cables lashed to a vertical metal ladder tray 8 feet in height. The combustion source is a ribbon burner with a flame temperature of approximately 1500°F which supplies 70,000 BTU of heat per hour. The flame application time is 20 minutes. To pass this test, the resulting char distance must not be greater than 1.5 meters (4.92 feet) from the point of flame application. This test is very similar to the CSA FT4 flame test. It is also similar to but more severe than the UL 1581 Vertical Tray Flame Test.

[*See UL 1581 Vertical Flame Test]*

CSA FLAME TESTS

CSA FT4 Vertical Tray Flame Test (CSA C22.2 No. 03):

This test is conducted on cables lashed to a vertical metal ladder tray 8 feet in height. The combustion source is a ribbon burner with a flame temperature of approximately 1500°F which supplies 70,000 BTU of heat per hour. The flame application time is 20 minutes. To pass this test, the resulting char distance must not be greater than 1.5 meters (4.92 feet) from the point of flame application. This test is very similar to the IEEE 1202 flame test. It is also similar to, but more severe than the UL 1581 Vertical Tray Flame Test.

[*See UL 1581 Vertical Flame Test]*

Class I Conductors for General Wiring

SPEC B041
March, 2012

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	27/24	10,910	5.53	0.117	2.97	34	51
9	—	—	—	—	—	—	—
8	37/24	14,950	7.57	0.135	3.43	46	68
7	—	—	—	—	—	—	—
6	61/24	24,640	12.50	0.174	4.42	77	114
5	91/24	36,760	19	0.242	6.15	116	173
4	105/24	42,420	21	0.262	6.60	137	204
3	126/24	50,500	25	0.285	7.24	167	249
2	147/24	60,600	31	0.307	7.80	190	283
1	224/24	90,900	46	0.380	9.65	287	427
1/0	273/24	111,100	56	0.410	10.41	351	522
2/0	323/24	131,300	66	0.470	11.90	407	606
3/0	456/24	184,200	92	0.549	13.94	594	884
4/0	551/24	222,600	112	0.593	14.70	696	1035
250	—	—	—	—	—	—	—
262.6	646/24	261,000	133	0.630	16	820	1220
300	—	—	—	—	—	—	—
313.1	777/24	313,900	159	0.685	17.40	987	1469
350	—	—	—	—	—	—	—
373.7	925/24	373,700	189	0.750	19	1176	1750
400	—	—	—	—	—	—	—
444.4	1110/24	448,400	225	0.820	20.80	1413	2103
500	—	—	—	—	—	—	—
535.3	1332/24	538,100	271	0.895	22.70	1697	2525
592	1480/24	597,900	303	0.972	24.70	1858	2765
600	—	—	—	—	—	—	—
646.4	1591/24	642,800	327	0.980	24.90	2020	3006
750	—	—	—	—	—	—	—
777.7	1924/24	777,700	394	1.075	27.30	2435	3624
1000	—	—	—	—	—	—	—
1111	2745/24	1,111,000	563	1.328	33.70	3400	5059

Dimensions and weights are nominal; subject to industry tolerances.

Class K Conductors for General Wiring

SPEC B046
September, 2014

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	10/30	1,020	0.52	0.036	0.91	3.2	4.8
18	16/30	1,620	0.82	0.046	1.20	5	7.4
16	26/30	2,580	1.31	0.057	1.40	7.97	12
14	41/30	4,110	2.08	0.071	1.80	12.8	19
12	65/30	6,530	3.31	0.088	2.20	20.3	30.2
10	105/30	10,380	5.26	0.112	2.80	33.3	49.6
9	133/30	13,090	6.63	0.150	3.80	42.4	63.1
8	168/30	16,510	8.37	0.164	4	53.2	80.8
7	210/30	20,820	10.50	0.175	4.40	66.8	99.4
6	266/30	26,240	13.30	0.198	5.00	84.2	125
5	336/30	33,090	16.80	0.261	6.60	106	158
4	420/30	41,740	21.20	0.249	6.30	132	196
3	532/30	52,620	26.70	0.298	7.60	169	251
2	665/30	66,360	33.60	0.317	8.10	211	314
1	836/30	83,690	42.40	0.356	9	266	396
1/0	1045/30	104,500	53	0.400	10.2	333	496
2/0	1330/30	133,100	67.40	0.450	11.4	425	632
3/0	1672/30	167,800	85	0.525	13.3	535	796
4/0	2109/30	210,900	107	0.575	14.6	676	1006
250	2499/30	250,000	127	0.688	17	802	1193
262.6	2627/30	262,600	133	0.680	17	824	1226
300	2989/30	300,000	152	0.753	19	960	1428
313.1	3145/30	315,288	160	0.710	18	1002	1491
350	3458/30	350,000	177	0.818	21	1120	1667
373.7	3737/30	373,700	189	0.790	20	1210	1800
400	3990/30	400,000	203	0.878	22	1290	1920
444.4	4514/30	451,400	229	0.825	21	1415	2106
500	5054/30	500,000	253	0.990	25	1635	2433
535.3	5320/30	532,000	270	0.950	24	1732	2577
592	—	—	—	—	—	—	—
600	5985/30	600,000	340	1.125	29	1950	2902
646.4	6466/30	646,600	328	1.035	26	2058	3063
750	7448/30	750,000	380	1.276	32	2427	3611
777.7	—	—	—	—	—	—	—
1000	9975/30	1,000,000	507	1.498	38	3250	4769
1111	—	—	—	—	—	—	—

Dimensions and weights are nominal; subject to industry tolerances.

Minimum Bend Radius

SPEC D001
October, 2011

Standard Thermosetting (XLP, Rubber) and Thermoplastic (PE, PVC, etc.) Insulated and Jacketed Single and Multi-Conductor Cables	Permanent Training After Installation (Static)	Pulling/Flexing (Dynamic)
a. Without Shield or Armor, O.D. Less Than 1.0"	**4**	10
b. Without Shield or Armor, O.D. Greater Than 1.0"	**5**	12
c. With Overall Braided Copper Shield	**5**	12
d. With Aluminum/Polyester Shield	**5**	12
e. With 26 AWG or Smaller Braided Steel or Alloy Armor	**6**	14
f. With Solid Overall Flat Metallic Copper Tape Shield	**10**	20
g. With Solid Overall Flat Metallic Tape Armor	**12**	24
h. With Interlocked Armor ("S" Profile)	**7**	14
i. With Components Individually Shielded with Copper Braids or Laminated Copper or Aluminum/Polyester Tapes	**5**	12
j. With Corrugated Armor or Shield Tape	**8**	16
k. Coax & Triax	**4**	20

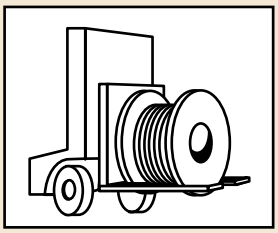
Multiply the ratio in this table times the nominal (calculated) overall cable diameter to obtain the minimum bending radius.

Recommended Reel Handling Practices

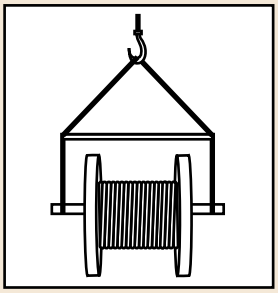
SPEC D005
May, 2013

How to Handle Cable Reels

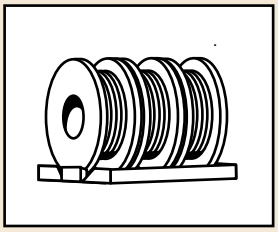
YES



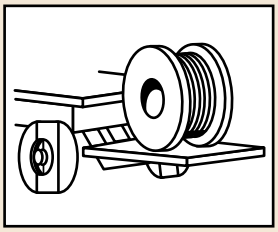
Cradle both reel flanges between forks.



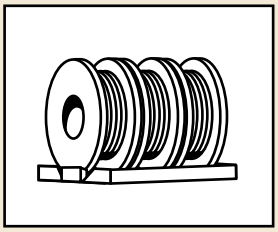
Reels can be hoisted with a shaft extended through both flanges.



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

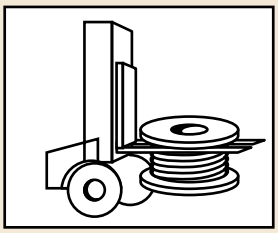


Lower reels from truck using hydraulic gate, hoist or fork lift. LOWER CAREFULLY.

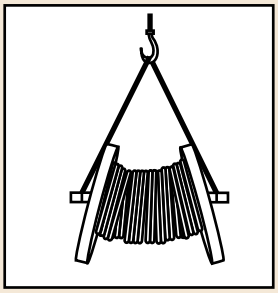


Always load with flanges on edge and chock and block securely.

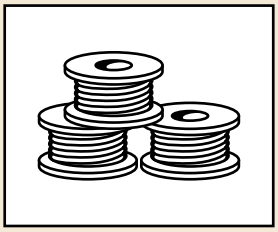
NO



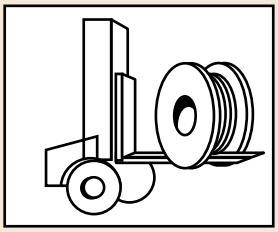
Do not lift by top flange. Cable or reel will be damaged.



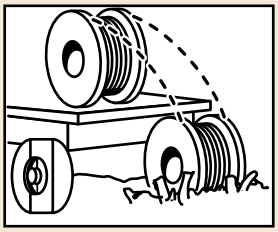
Use a spreader bar to prevent bending the reel flanges and mashing the cable.



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.

Recommended Cable Handling Practices

SPEC D025
October, 2011

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” page.

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.

Minimum Drum Diameters for Packaging Cables

Type of Cable	Minimum Drum Diameter as a Multiple of Outside Diameter of Cable
1. Single and multiple conductor cable - unshielded 0-2000 V	10
2. Single and multiple conductor cable - unshielded 2400 V	12
3. Single and multiple conductor cable - wire shield (UniShield®) 5-35 kV	12
4. Single and multiple conductor cable - helically applied tape shield (Uniblend®) 5-35 kV	14
5. Single and multiple conductor cable - longitudinally applied flat tape shield (Type TC)	20
6. Single and multiple conductor cable - Interlocked Armor (Duralox®) 600 V-35 kV	14
7. Triplexed single conductors cabled together. The circumscribing overall diameter* shall be multiplied by the factor in 1 - 6 and then by the reduction factor.	.75

*Single conductor times 2.155 times

NEMA WC26 EEMAC201-2007 Binational Wire and Cable Packaging Standard

Recommended Cable Storage Practices

SPEC D050
May, 2013

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 and should be used within two years or less.

Cables should be stored in a sheltered area. The cable conductor should not be exposed to water.

Cables with a cold temperature marking, e.g. –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.

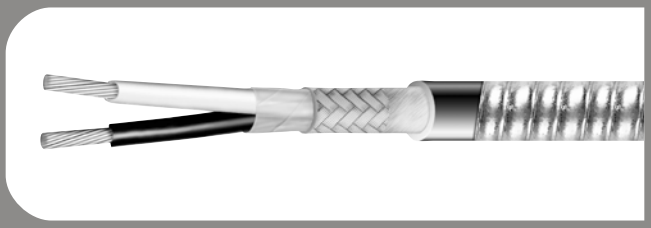
Where the reels are exposed to the weather, a bimonthly inspection should be performed to observe any sign of deterioration.

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.

Catalog Number Index

POWERING YOUR MASS TRANSIT CABLING CONNECTIONS



As developments in the transit industry continue to increase the demand for safety, instantaneous response to commands and the significant reduction of braking distances at higher speeds, General Cable continues to respond with the latest engineered designs.

General Cable's years of dedicated material development, engineering expertise and advanced manufacturing processes were called upon by the transit industry to engineer Electronically Controlled Pneumatic (ECP) brake cables that would meet the stringent standards of AAR S-4210 and be designed specifically for installation both under and between cars.

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- The reduction of EMI/RFI interference with a tinned copper braided shield
- Arctic-grade, heavy-duty reinforced Neoprene jacket that provides excellent low-temperature performance and tough mechanical properties
- Optional galvanized or aluminum armor over the cable jacket allows for conduit-free installations, providing significant installed cost savings

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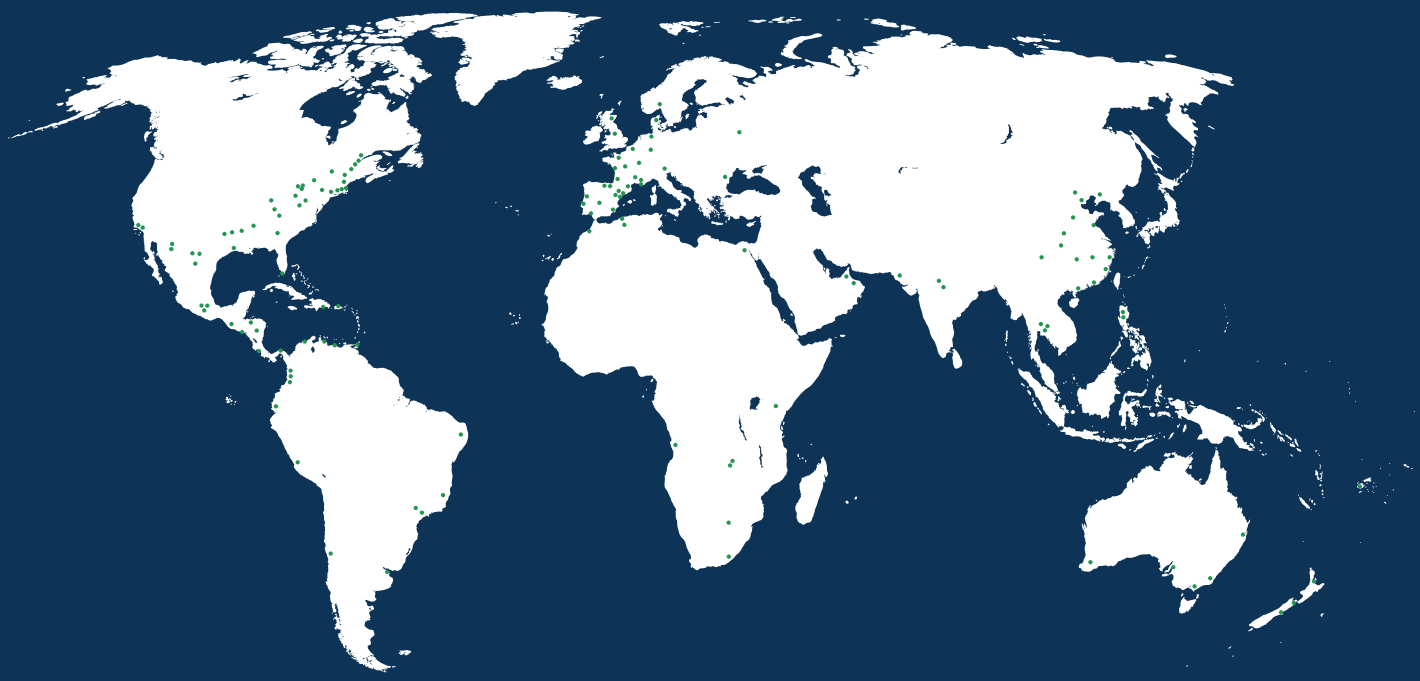

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