PERFORM BEYOND EXPECTATIONS.

# BERK-TEK 2015 PRODUCT CATALOG

THE WORLD'S HIGHEST PERFORMING NETWORK CABLES HAVE **BERK-TEK** WRITTEN ALL OVER THEM.







Berk-Tek®
A NEXANS COMPANY

www.berktek.com

# BUILD THE BEST NETWORK WITH BERK-TEK LEVITON TECHNOLOGIES

Choosing to install a Berk-Tek Leviton Technologies system means you are choosing the strongest LAN and data center solutions in the industry. This alliance between two of the best brands in the business delivers performance beyond the standards and a limited lifetime product and performance warranty on every system installed by an OASIS Certified Integrator or Leviton Certified Contractor.

A complete portfolio of copper and fiber optic solutions, the Berk-Tek Leviton Technologies systems combine the premier cable and connectivity products of each technology expert to provide unparalleled quality and reliability. With numerous patents and industry-firsts, Berk-Tek and Leviton products deliver unique benefits designed to support the technology needs of today and tomorrow.

Custom and made to order configurations designed and manufactured in the United States mean some of the fastest turnaround times in the industry without sacrificing precise fit or product quality. Top all that off with integrated teams to provide design, specifying, troubleshooting and training to assist with whatever questions arise, and it becomes clear why those that want the best networks choose Berk-Tek Leviton Technologies.

Two is better than one.

Berk-Tek® LEVITON® TECHNOLOGIES

BerkTekLevitonTechnologies.com

## THE ADVANTAGE OF AN OPEN ARCHITECTURE APPROACH

Fully leveraging high-speed network applications in the enterprise requires a structured cabling system that exceeds current and emerging standards, end-to-end. To achieve optimal network performance, every component in the system must be fully compatible, perfectly matched and expertly installed. The Berk-Tek Open Architecture Systems Interconnection Solutions (OASIS) program is powerful enough to deliver guaranteed performance over a full 15 years, yet flexible enough to utilize your preference for connectivity with carefully selected and qualified OASIS connectivity partners.

### OASIS: GUARANTEED TOTAL SYSTEM PERFORMANCE

The Berk-Tek OASIS program is designed specifically to address component compatibility and installation variables in the structured cabling system and deliver guaranteed total system performance. At its core, OASIS utilizes Berk-Tek's premier LANmark™ series of UTP cables and our premium fiber optic technology in concert with connectivity provided by the industry's leading vendors. Every OASIS solution is carefully matched and qualified through extensive research and testing, providing guaranteed total channel performance and unmatched flexibility.

OASIS
Open Architecture Systems Interconnection Solutions

### COASIS: GUARANTEED TOTAL CHANNEL PERFORMANCE (CANADA)

The Berk-Tek COASIS program features an end-to-end solution that can be customized to meet your needs. COASIS networks are built on the solid foundations of both premium LANmark copper Cat 5e, Cat 6 and Cat 6A cables and COASIS GIGAlite™ Fiber Solutions. These solutions are designed for high-speed performance in a horizontal and/or backbone fiber optic structured cabling system. Consistent channel performance is guaranteed by Berk-Tek thanks to premium cable combined with carefully selected and qualified connectivity manufacturers*, in addition to tested and verified solutions.

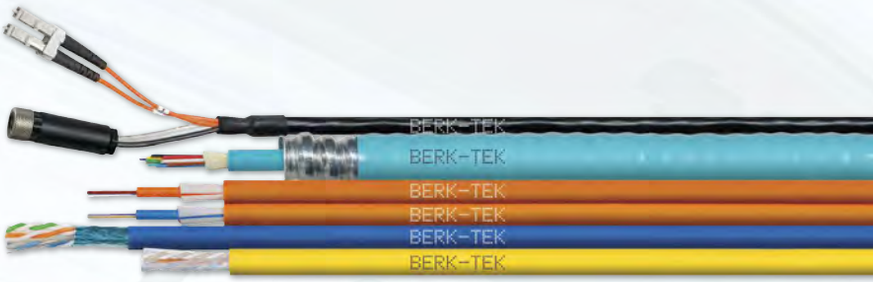
High quality network components are only part of the equation. Complete system performance and reliability also requires knowledgeable and skilled technicians to install and test your network according to industry standards. Berk-Tek thoroughly reviews every application and then administers rigorous technician testing to ensure only the best contractor organizations are able to offer 25-year COASIS warranties. *As a result, the Berk-Tek COASIS Solution installed today will not only maximize the value of your current application, it will also provide seamless migration to tomorrow's technology.* ***Guaranteed.***

COASIS
Canadian Open Architecture Systems Interconnection Solutions

*The Berk-Tek COASIS program including the COASIS warranty is not offered in conjunction with, nor is it supported or approved by, this connectivity manufacturer. For systems participating in the COASIS Program using connectivity from this manufacturer, warranty coverage for the system, including cable and connectivity, will be offered and provided solely by Berk-Tek. Complete terms and conditions of the COASIS warranty can be reviewed at www.coasis.ca.

PERFORM BEYOND EXPECTATIONS.

# What's Inside






## QUALITY
## Made in the USA

***Each specialized Berk-Tek manufacturing*** *facility is focused on refining and improving the technology behind a particular type of data communications cabling. This specialization allows for the development of expertise and process control and ensures that your cables meet the highest quality standards.*

*Berk-Tek's commitment to manufacturing excellence and leadership can be seen in our many continuous improvement programs. We utilize an automated shop floor data acquisition system that is able to track over 100 different product and process quality parameters, and we continue to cultivate internal Six Sigma Quality experts. All of these efforts are undertaken to ensure consistent product quality for our customers.*

*Berk-Tek is a proud US manufacturer committed to maintaining US jobs and meeting the needs of our domestic customers, but the story does not end there. When you work with Berk-Tek, you work with Nexans, the global expert in cables and cabling systems. With a presence in 30 countries and more than 21,000 employees worldwide, you have access to the collective expertise and reach of an organization that is focused on leading the development of innovative cabling technology for new markets and new opportunities.*

MADE IN THE USA



# THE TEK CENTER AT BERK-TEK

Because selecting the right network infrastructure is a critically important decision — not only in terms of installed cost, but also the total cost of ownership — Berk-Tek created the TEK Center, a leading edge facility where you can evaluate options firsthand and work with Berk-Tek engineers to spec a cost-effective system that will pay big dividends for years to come.

Here are just a few things that the TEK Center can offer you, but please contact us to learn more.

- We can customize our demo area to preview how different network infrastructures could work for you.
  - *Top of Rack (ToR) and End of Row (EoR)*
  - *Above Rack and Raised Floor*
  - *Migration Path from 1G to 100G and beyond*
- Take a test drive with the latest in IP convergence.
  - *Building Automation controlled by mobile devices*
  - *IP Access Control and Security Cameras*
  - *Emergency Call Boxes*
- We can explain and demonstrate some of the latest technologies so you can determine what is right for your needs — today and tomorrow.
  - *Wireless 802.11ac and 802.11ad*
  - *Category 6A and Category 8*
  - *HDBase-T*
- We can work with you to test different options you are considering.
  - *Want to see how different cables perform when subjected to certain levels of stress?*
  - *Want to see how different cables fit into cable tray or conduit?*
  - *There are any number of different scenarios we could work with you on to give you the information you need to make the right decision.*

While you're here, you can also tour our 300,000+ square foot manufacturing facility — an absolutely amazing operation that starts with bare copper from the rod mill and ends with an automated packaging process. The precision, the process, and the consistency that must be maintained throughout the manufacturing process is just incredible. It's really something to see.

## LOUNGE AND MEETING AREA

Our first class lounge and meeting area with its IP controlled lighting and music features three touch screen kiosks that can be programmed to cover information on various topics of interest to you and your team.

## DATA CENTER AREA

The TEK Center features a working Data Center with several network architectures on display. Additionally, we have the ability to customize the display so you can evaluate several different options to determine what is right for you. You will see different migration paths from 1G to 10G to 100G and beyond, and how you can condense more fibers (or copper) infrastructure into smaller and smaller footprints using Berk-Tek's Micro Data Center Plenum (MDP) cable or our TekPatch Mini-6 series of reduced diameter patch cable.

## ENTERPRISE AREA

In the Enterprise area, we have our standards compliant OneReach™ System on display which allows you to take PoE out to over 4,000 feet. This can be a big cost savings when you consider not only the advantages that PoE technology offers, but also if you can consolidate your PoE switches and your uninterruptable power supplies (UPS) to one Telecommunications Room (TR). The traditional method is to have several TRs located throughout your campus to stay within the 100 meter limit.

The Enterprise area also displays real world applications where Maximum Performance for Voice, Data, and Power can make a big performance difference. You can hear the difference in VoIP applications and see the difference in video applications. We have an HDBase-T display set up where you can physically see what happens when bundling UTP cables together to support this application. In the ceiling, 802.11ac wireless access points (WAP) are installed, and you will gain an understanding as to why we recommend at least two (2) LANmark™-XTP (Cat 6A) cables per WAP and why Berk-Tek's direct attach warranty is so important with this application.

## THE LABS

Berk-Tek has two state-of-the-art lab facilities, staffed with experienced engineers and scientists whose sole focus is to develop innovative structured cabling solutions:

- **Applications Lab:** We put our cables through rigorous testing of real world applications, in real world environments to make sure they perform as designed.
- **Materials Lab:** We invent our own compounds that maintain all of the required safety requirements, but also outperform off the shelf compounds. As more devices connect to the network, more applications are operating simultaneously, and more power is transmitted, materials play a huge role in operating performance — and long-term value.

Berk-Tek® LEVITON® TECHNOLOGIES




# DELIVERING UNMATCHED PERFORMANCE AND GUARANTEED RELIABILITY SINCE 1961.

With Berk-Tek, you get unmatched product performance with guaranteed reliability from a world-class manufacturer focused on delivering cabling excellence. See for yourself.

## OUTSTANDING PRODUCT PERFORMANCE

Product performance begins with strong engineering and design. The outstanding Berk-Tek product, process and manufacturing engineers are backed by an array of researchers and engineers within the Nexans R&D network. The dynamic interplay between the research, development and manufacturing focuses of our engineering teams delivers products guaranteed to perform.

## GUARANTEED RELIABILITY

Reliable product performance comes from the combination of a well-engineered product and stringent manufacturing processes. With state-of-the-art equipment for manufacturing, monitoring and testing, Berk-Tek facilities consistently exceed quality standards. Every product is backed by our product warranty, and when installed as part of an OASIS or Berk-Tek Leviton Technologies System, industry-leading warranties are available.

## CUSTOMER FOCUS

Our highly qualified sales force and technical support team provide industry expertise and experience to guide you through the entire project lifecycle, from the development of the design specification, through the bidding process, to purchasing, installation and support.

## READILY AVAILABLE

You have many choices of where to buy Berk-Tek products as they are in stock with a variety of distribution channels nationwide. All of our distribution partners are committed to providing you with high-quality customer service and will work with you to ensure that your materials are available on time.

## CERTIFIED INSTALLERS

Berk-Tek certifies only the most qualified cable installers who understand the applicable codes, guidelines and product capabilities, ensuring maximum network performance and proper installation.

## EXTENSIVE EXPERTISE AND EXPERIENCE

Working with Berk-Tek means that you have a partner that has experience in virtually every installation and application environment, including many enterprise networks and data centers worldwide.

Berk-Tek and Nexans help to guide the development of the standards that govern the structured cabling industry. With positions on industry steering committees, we facilitate the evolution of technology and best practices.

## COMPREHENSIVE PRODUCT ARRAY

Berk-Tek offers one of the most complete product lines in the industry. Our product array continues to grow with enhancements to existing products and the addition of specialized cables to meet the specific needs of new markets and new applications.

## LEADING CORPORATE CITIZEN

In addition to our focus on exceeding technical cabling requirements, we also strive to be a leading corporate citizen. With environmentally conscious manufacturing programs, progressive employment policies and a pledge to maintaining high-quality manufacturing facilities and jobs within the United States, Berk-Tek is committed not only to our customers, but also to our communities.

## GLOBAL REACH

When you work with Berk-Tek, you access the entire Nexans global organization. This provides you with the support of an organization that is focused on leading the development of cabling technology into new markets worldwide.

RoHS COMPLIANT



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# BERK-TEK COPPER CABLES:
## Innovative Manufacturing Excellence

*Performing to ISO 9001 certification standards and the TL 9000 quality management system helps to drive continuous improvement, consistent quality and on-time delivery.*

Berk-Tek's consistent quality and on-time delivery are the result of strategic and on-going investment in state-of-the-art manufacturing and testing equipment and continuous improvement programs.

From Nexans copper rod to final out-the-door products, Berk-Tek is committed to manufacturing cables with an extra margin of performance that separates us from the rest. All products are backed by engineering, research and full testing before leaving the manufacturing floor.

We guarantee superior product performance backed by value-added procedures, including:

- In-line data collection for drawing and extrusion
- Computerized on-time delivery schedule through machine reporting on each component of the manufacturing process
- On-line monitoring of eccentricity, capacitance, diameter and concentricity parameters
- Production comparison of each process and each parameter to determine the best process flow from batch to batch
- Primary line batching for more efficient production management
- In-line jacketing for production consistency
- Automated box packaging eliminates human error and provides smooth payout
- Automated labeling and data collection information for complete manufacturing traceability

# PRODUCT HIGHLIGHTS

## SPECIFY WITH CERTAINTY

When you specify any of the Berk-Tek LANmark™ products you can be sure that you are getting the performance you expect thanks to the ETL LANmark Verification Program.

While many manufacturers claim performance above the standard, Berk-Tek is the first manufacturer to independently verify performance not to the standard, but beyond the standard to our own specifications.

Through this program, Intertek, the world's largest independent testing, inspection and certification provider and proprietor of the ETL Verification Mark, independently selects and tests the Berk-Tek LANmark products to verify that performance meets or exceeds the guaranteed specification levels, ensuring that you receive the headroom you expect.

So put speculation and guesswork aside, and choose the only manufacturer providing independent verification of performance to product specifications: Berk-Tek.

## MAKE INSTALLS FASTER AND EASIER WITH TEKLOK

TekLok's unique packaging is revolutionizing cable installations around the world. Unlike competitor installation requirements, TekLok eliminates the need for special tools, deployment devices, and additional manpower to hold the boxes during the pulling process, effectively speeding up installation and reducing overall project costs.

The easy-to-use, interlocking tabs allow for quick and convenient assembly of stacks of cable boxes. Each stack is grouped and locked together using top-side tabs to form a fortified wall of cable boxes. It's fast. It's convenient. It's easy. And most importantly, it's stable.

### BENEFITS

- Standard feature on all Tek Pak pull boxes
- Fast, easy, convenient, and stable
- Easy to assemble with no special tools required
- Quicker installation allows for reduced project costs
- Unique, environmentally-friendly design offers less packaging waste



- *Innovative thumb-hole for secure grip.*

## CUT THE SCRAP WITH SMARTPAK

With 1,500 feet of cable in each box, versus standard 1,000 ft boxes, smartPAK delivers the convenience and ease of use of a traditional pull-box with the additional benefits of 50% more cable.

### FEATURES AND BENEFITS

1,500 ft box virtually eliminates cable scrap when installing standards compliant 90 meter horizontal cable runs or even "typical" 45 meter runs.

- More efficient installations
  - More cable pulls per box
  - Fewer box change-over's
  - Fewer boxes to breakdown or recycle
  - Fewer boxes to handle or transport
- Reduction in jobsite waste
  - 10%-15% reduction in cardboard per 1,000 feet
- All core UTP plenum and riser products are available in all colors
  - LANmark-1000 | LANmark-6
    LANmark-350 | Hyper Plus 5e


*Try the Online smartPAK Calculator to see how much you can save on your next project* — **www.smartpakcable.com**

# MAXIMUM PERFORMANCE FOR VOICE, DATA AND **POWER** IN THE REAL WORLD.

## Protecting your IP traffic from noise and heat in the real world.

When PoE was introduced over a decade ago, it changed the landscape of structured cabling networks. Today, for many applications, it's standard operating procedure. But higher power PoE is coming, and protecting network traffic from the noise and heat inherent with PoE will be critically important.

With their advanced engineering and field-proven design, Berk-Tek's LANmark™-1000, LANmark-2000, LANmark-10G2 and LANmark-XTP integrated data cables protect your network from noise and heat, while they deliver consistent performance in real world applications.

Proprietary insulating materials protect voice, data, video and other network traffic from heat. Our Tek-Twist technology protects network traffic from noise, while our field-tested and installer-proven premium jacketing materials protect the cable itself from the physical hazards of real world installations.

As a result, your network is ready to support simultaneous voice, data, and power without compromising performance.

### FEATURES AND BENEFITS

- Proprietary materials protect from heat
- Tek-Twist Technology protects from noise
- Only premium jacketing compounds are used
- Protecting your network investment


*Protect your network traffic from noise and heat in the real world with performance-leading LANmark-1000, LANmark-2000, LANmark-10G2 and LANmark-XTP integrated cables. Only from Berk-Tek.*



RoHS COMPLIANT

# REAL WORLD APPLICATIONS. RESULTS YOU CAN SEE AND HEAR.

Berk-Tek developed a new 4-connector, 100-meter channel that measures cable performance with simultaneous transmission of voice, data and power in the real world.

## VoIP TESTING

To measure VoIP performance, Berk-Tek introduced Mean Opinion Score (MOS) testing to the structured cabling industry. MOS is a common test used once VoIP systems are installed, but why not be sure by verifying MOS performance before the install? We have recordings of different MOS scores, so you can actually hear the difference.

## DATA TESTING

Berk-Tek uses Frame Error Testing (FER) to measure data performance. Many companies perform Bit Error Testing on their products, but this is much less demanding. For example, an Ethernet frame can hold up to 12,144 bits. In FER testing, if one bit has an error, the entire frame is considered an error. In BER testing, the one bit with an error is counted as such, but the other 12,143 bits are counted
as acceptable.

## VIDEO TESTING

Berk-Tek incorporated a test called Media Loss Rate (MLR) into our real world testing. Ideally, you want to have an MLR = 0, meaning no errors. An MLR score higher than 0 means there were errors and each error can affect both the picture and audio quality of the video.

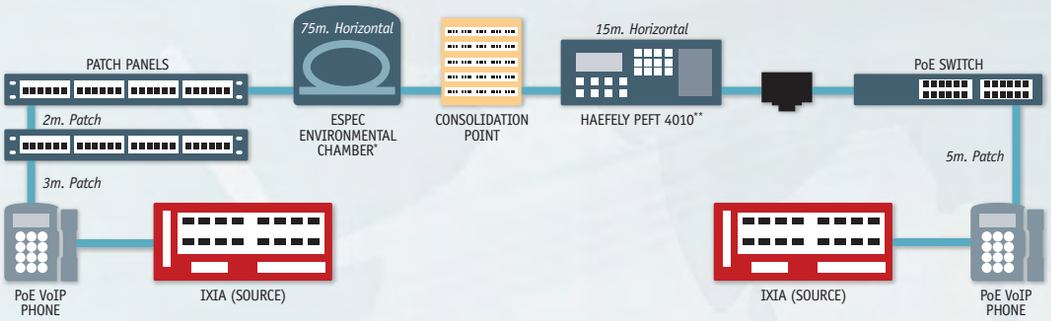
## FEATURES AND BENEFITS

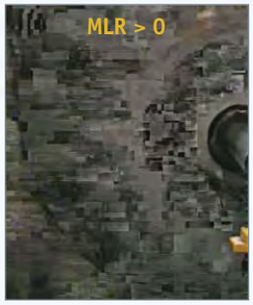
- Real world application testing
- Results you can see and hear
- Cables designed and built for the real world

## UNIQUE TESTING

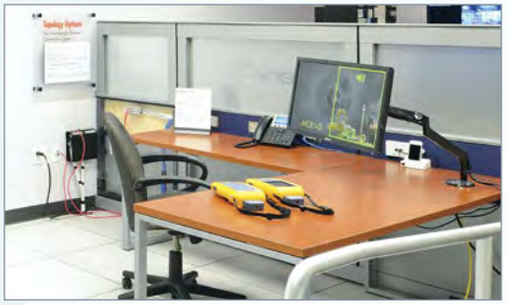
*Berk-Tek tests its LANmark™-1000, LANmark-2000, LANmark-10G2 and LANmark-XTP in this four connector, 100-meter channel while simultaneously transmitting real VoIP, Data and PoE.*

*Horizontal cable portion of channel, coiled within chamber
**EFT noise generator with power line run along channel







## MEDIA LOSS RATE TESTING

*Berk-Tek incorporates a Media Loss Rate (MLR) test into our real world testing. An MLR score of 0 means no errors while any score higher than 0 means there were errors. An example of an MLR test is displayed in our Enterprise Area, where you can hear the difference in VoIP applications and see the difference in video applications.*

# WHY CATEGORY 6A?

## Ten times the bandwidth of Category 6.

Specifying the right cable for an installation seems to require a crystal ball. What are the network demands today, and what will they be even three years from now? And what about the cost equation?

Prudent network design demands that the installation choices we make today continue to add value to the organization in the future. And while cost is always a factor, total cost of ownership is the key.

For many networks, even today, Category 5e can meet the basic requirements. But applications and bandwidth requirements have grown exponentially since 1999 when Category 5e was ratified, and with much of the cost of a network upgrade in installation labor and reconfiguration, Category 6A makes a lot more sense. Here's why.

### ADVANCES IN WIRELESS TECHNOLOGY

Continuing advances in wireless technology such as those set forth in IEEE 802.11ac, require more robust cabling infrastructure support. The TIA's TSB 162-A recommends Category 6A for 802.11ac WAP deployment. Berk-Tek's Category 6A product line offers several options in terms of performance and cost so you can select the best product to meet your needs.

### INCREASED RELIANCE ON PoE

With the increased application of PoE across networks, the heat generated by PoE becomes more and more of an issue. Berk-Tek's LANmark™-XTP 6A option delivers up to 46% less temperature change in a cable bundle than a Category 5e cable. That's significant.

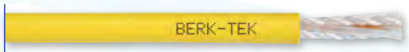
### GROWING BANDWIDTH DEMAND

Every day, there are new, more bandwidth-intense applications entering the vernacular — requiring networks that can accommodate and facilitate them without bogging down. Berk-Tek's Category 6A options provide 10 times the bandwidth of Cat 5e or Cat 6. That's significant, too.

## WHICH BERK-TEK CATEGORY 6A OPTIONS ARE RIGHT FOR YOU?

With their advanced engineering and field-proven design, all Berk-Tek Category 6A options deliver extraordinary electrical performance, including support for robust PoE applications, while they protect your network from noise and heat.

GOOD




**LANmark-10G2** meets the Cat 6A spec for Alien Crosstalk and provides excellent noise rejection and high PoE capability.

BETTER

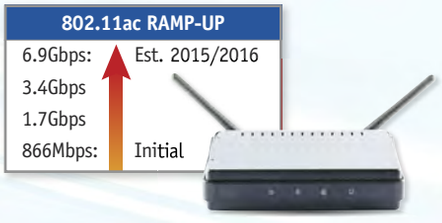

**LANmark-XTP** is a "step-up" choice for Cat 6A applications with outstanding noise rejection, excellent high PoE performance and Alien Crosstalk performance that exceeds the Cat 6A standard.

BEST


**LANmark-10G FTP** is an FTP Cat 6A cable option that provides the most robust performance available in a Cat 6A cable. It features our best performance characteristics of any Cat 6A option.

| | LANMARK-10G2 | LANMARK-XTP | LANMARK-10G FTP |
|---|---|---|---|
| Alien X-talk | Meets Cat 6A | Exceeds Cat 6A | Exceeds Cat 6A |
| Type | UTP | UTP | F/UTP |
| Outside Diameter | 0.300" | 0.275" | 0.280" |
| Noisy Environments | Good | Better | Best |
| Cable Cost | Low | Average | High |
| Mixed Pathway* | Good | Better | Best |
| Installation Cost | Low | Average | High |
| High PoE | Good | Better | Best |

The wireless 802.11ac standard will ramp to 6.9Gbps from the wireless access point (WAP) back to the telecommunications room (TR). Therefore, Category 6A, which supports 10Gbps, is needed to support the full potential of 802.11ac. TIA TSB 162-A recommends two (2) Category 6A cables per WAP to support future expansion. Berk-Tek recommends our LANmark-XTP Category 6A because of its superior performance protecting your IP traffic from the effects of noise, alien crosstalk, and heat from PoE.




### FEATURES AND BENEFITS

- LANmark-10G2 is a good choice when budget is tight
- LANmark-XTP has a discontinuous shield that does not need to be grounded
- LANmark-XTP provides performance close to FTP but for only a relatively small premium over LANmark-10G2

# LANMARK™-XTP

UTP/4-PAIR
CATEGORY 6A

**LANMARK-XTP** features a small diameter of 0.275" that allows for easier and more efficient installation and cable management compared to other Category 6A UTP cables. The smaller size also improves density and cooling. It features innovative noise canceling XTP technology that delivers exceptional alien crosstalk (AXT) performance. LANmark-XTP is capable of transmitting 10GBASE-T network applications and mission critical systems running at 10 Gigabit speeds with performance verified beyond ANSI/TIA Category 6A standards by third-party labs.


## FEATURES

- Innovative noise canceling XTP technology delivers superior alien crosstalk (AXT) performance
- Backwards compatible with Gigabit Ethernet to provide seamless migration to 10GBASE-T
- Manages the convergence of voice, video and data at 10 Gigabit Ethernet speeds, simplifying networks

## BENEFITS

- Supports both long and short channels
- Easier installation and cable management with reduced outer diameter of 0.275"
- Error-free performance up to 10 Gigabit Ethernet with full duplex transmission up to 500 MHz
- No bonding or grounding needed allows for simple and efficient installation

## CONSTRUCTION

Bare copper wire insulated with FEP. Two primaries are twisted together to form a pair and four such pairs are cabled together with a central filler to form the basic unit. The cable core is surrounded by an aluminum/polyester tape and jacketed with flame-retardant polymer alloy.

## FLAME RATING

| | |
|---|---|
| Non-Plenum | NFPA 70, CMR |
| Plenum | NFPA 70, CMP |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>Category 6A<br>UL 444 and C22.2<br>No. 214-02 |

## APPLICATIONS

Berk-Tek's LANmark-XTP UTP cable is intended to support the highest speeds in networking today—10 Gigabits per second.

| | | |
|---|---|---|
| IEEE 802.3an | 10GBASE-T | 10 Gb/s |
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| TIA/EIA 854 | 1000BASE-TX | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| CDDI | 10GBASE-T | 10 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | 1 Gb/s |
| IEEE 802.3at | PoE+, Type 1&2 | 1 Gb/s |

| PART NUMBERS | CMP | CMR |
|---|---|---|
| Gray 1000 ft. Reel | 11082059 | 11082064 |
| White 1000 ft. Reel | 11082058 | 11082063 |
| Blue 1000 ft. Reel | 11082057 | 11082062 |

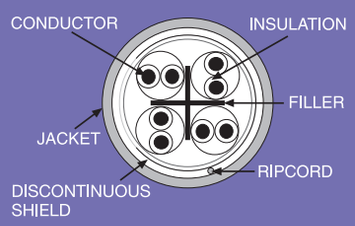
| TECHNICAL DATA — PHYSICAL | CMP | CMR |
|---|---|---|
| Conductor | 23 AWG solid bare copper | 23 AWG solid bare copper |
| Conductor diameter–in. (mm) | 0.023 | 0.023 |
| Insulated conductor diameter–in. (mm) | 0.046 | 0.044 |
| Cable diameter nom.–in. (mm) | 0.275 | 0.275 |
| Nominal cable weight–lb./kft. (kg/km) | 38 | 37 |
| Min. bend radius–in. (mm) | 1.12 | 1.20 |
| | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** |
| Velocity of Propagation | 67% | 67% |
| Time Delay Skew | 45 nsec/100 m max. | 45 nsec/100 m max. |

## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## AT A GLANCE

- Tested to 750 MHz
- Supports 10 Gigabit Ethernet
- Alien crosstalk compliant

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Berk-Tek®
A NEXANS COMPANY

# LANMARK™-10G2

UTP/4-PAIR
CATEGORY 6A

**LANMARK-10G2** is the next-generation cable that is capable of meeting the demanding requirements for 10 Gigabit Ethernet. LANmark-10G2 is a true multimedia cable and is specifically designed to handle voice, video and data simultaneously. This convergence of technologies simplifies even the most dynamic network. This breakthrough cable technology has been specifically designed to reduce alien crosstalk and its effects on 10GBASE-T networks. It also provides 2 dB NEXT and PSNEXT headroom and 4 dB of FEXT and PSFEXT, for beyond the standards performance and reliability.


## FEATURES

- Flexible, round, compact design
- Alien crosstalk compliant – ETL Verified
- Headroom for all crosstalk parameters
- Fully compliant to Category 6A requirements
- Documented balance characteristics (LCL/TCL, EL TCTL)
- Reduced attenuation (Insertion Loss)
- Highest-performing UTP cable available

## BENEFITS

- Easier installation and cable management with round design
- Capable of reliably supporting 10GBASE-T networks
- Provides bandwidth required for multimedia, broadband video, analog video and other future applications
- Balance characteristics improve overall cable performance and reduce transmission errors
- Improved insertion loss for stronger signal to noise ratio
- Characterized to 750 MHz, 250 MHz greater than the standard

## CONSTRUCTION

Bare copper wire insulated with polyethylene (non-plenum) or insulated with FEP (plenum). Two insulated conductors twisted together to form a pair and four such pairs cabled to form the basic unit made round with 3 monofilaments and with a striated flame-retardant PVC jacket.

## FLAME RATING

| | |
|---|---|
| Non-plenum | UL 1666, CMR, IEC 332-1 |
| Plenum | NFPA 262, CMP |
| Patch | UL 1685, CM, IEC 332-1 |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2 Category 6A<br>UL 444 and C22.2 No. 214-02 |
| International | EU Directive 2006/96/EC (Low Voltage)<br>EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

Berk-Tek's LANmark-10G2 UTP cable is intended to support the highest speeds in networking today—10 Gigabits per second.

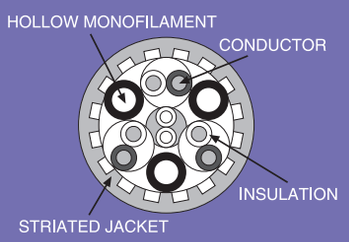
| | | |
|---|---|---|
| IEEE 802.3 | 10GBASE-T | 10 Gb/s |
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| TIA/EIA-854 | 1000BASE-TX | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |

## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## AT A GLANCE

- Tested to 750 MHz
- Supports 10 Gigabit Ethernet
- Alien crosstalk compliant




## Now Available in Reel in a Box

| PART NUMBERS | CMP | CMR |
|---|---|---|
| Blue 1000 ft. Reel in a Box | 11085339 | 11084689 |
| White 1000 ft. Reel in a Box | 11089901 | 11089906 |
| Gray 1000 ft. Reel in a Box | 11089905 | 11089907 |

| PART NUMBERS | CMP | CMR | PATCH |
|---|---|---|---|
| Gray 1000 ft. Reel | 10137183 | 10137701 | 11035873 |
| White 1000 ft. Reel | 10137384 | 10137703 | 10177330 |
| Blue 1000 ft. Reel | 10130484 | 10137700 | 10123772 |
| Yellow 1000 ft. Reel | 10137385 | 10137706 | — |
| Green 1000 ft. Reel | 10137694 | 10138770 | 10135528 |

Additional jacket colors available.

| TECHNICAL DATA — PHYSICAL | CMP | CMR | PATCH |
|---|---|---|---|
| Conductor | 23 AWG solid bare copper | 23 AWG solid bare copper | 26 AWG tinned stranded copper |
| Conductor Diameter | 0.023 in. | 0.023 in. | 0.019 in. |
| Insulated Conductor Diameter | 0.044 in. | 0.047 in. | 0.033 in. |
| Cable Diameter | 0.300 in. | 0.320 in. | 0.290 in. |
| Cable Weight | 38 lb./kft. | 42 lb./kft. | 40 lb./kft. |
| Min. Bend Radius | 1.2 in. | 1.3 in. | 1.2 in. |
| | | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** | **PATCH** |
| Velocity of Propagation | 67% nom. | 66% nom. | 67% nom. |
| Time Delay Skew | 45 nsec/100 m max. | 45 nsec/100 m max. | 45 nsec/100 m max. |

Berk-Tek® A NEXANS COMPANY



RoHS COMPLIANT

Berk-Tek introduces the new **BERK-TEK-10G RD** (Reduced Diameter), delivering guaranteed 10G channel performance to a maximum distance of 60 meters with a small, 0.265" OD, Berk-Tek-10G RD is perfect for short distance applications where pathway space is at a premium.

# BERK-TEK-10G RD

UTP

10G CATEGORY 6

## FEATURES

- Small, round OD of 0.265"
- Conventional UTP cable design
- Designed to work with Category 6A connectivity
- Can be installed in a common pathway with LANmark™-10G2
- Verified to ANSI/TIA-568-C.2-10 Category 6A (internals) to a max. 60 meters

## BENEFITS

- Guaranteed 10G performance
- No alien crosstalk testing required
- Minimize pathway costs thanks to reduced OD
- Improved air circulation compared to larger 10G cable choices
- Supports four-connector channel to 60 meters
- Supports seven meter minimum channel length with two connectors

## CONSTRUCTION

Bare copper wire insulated with polyethylene and cellular polyethylene. Two insulated conductors twisted together to form a pair and four such pairs cabled to form the basic unit around a central, splined filler. The pairs, filler and ripcord are then jacketed with a polymer alloy.

## FLAME RATING

| | |
|---|---|
| Non-Plenum | UL 1666, CMR |
| Plenum | NFPA 262, CMP |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2-10 Category 6A for internals to max 60 m.<br>UL 444 and C22.2 No. 214-02 |
| International | EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

Berk-Tek's 10G RD UTP cable is specifically designed to support 10 Gigabit channels at distances up to 60 meters. Additionally, Berk-Tek-10G RD supports the following high-speed data applications:

| | | |
|---|---|---|
| IEEE 802.3an | 10GBASE-T | 10 Gb/s |
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| TIA/EIA 854 | 1000BASE-TX | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10 BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |


## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

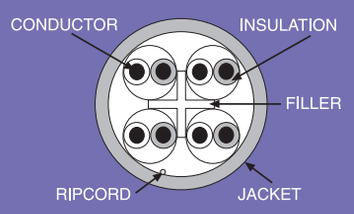
| PART NUMBERS | CMP | CMR |
|---|---|---|
| Blue 1000 ft. Reel in a Box | 10190333 | 10189758 |

Additional jacket colors available.

| TECHNICAL DATA — PHYSICAL | CMP | CMR |
|---|---|---|
| Conductor | 23 AWG bare copper | 23 AWG bare copper |
| Conductor diameter–in. (mm) | 0.022 (0.558) | 0.022 (0.558) |
| Insulated conductor diameter–in. (mm) | 0.037 (0.940) | 0.039 (0.990) |
| Cable diameter nom.–in. (mm) | 0.265 (6.7) | 0.265 (6.7) |
| Nominal cable weight–lb./kft. (kg/km) | 33.5 (50) | 33.5 (50) |
| Min. bend radius–in. (mm) | 1.06 (26.9) | 1.06 (26.9) |
| | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** |
| Velocity of Propagation | 72.60% | 69.20% |
| Time Delay Skew | 45 nsec/60 m max. | 45 nsec/60 m max. |

## AT A GLANCE

- Tested to 500 MHz
- Specialized design for short-reach 10G needs
- Small OD for simplified installation




RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# LANMARK™-2000

UTP/4-PAIR

PREMIUM CATEGORY 6

**LANMARK-2000** is Berk-Tek's highest-performing Premium Category 6 cable. Every key electrical property has been improved when measured against the ANSI/TIA-568-C.2 Category 6 standard for transmitted signals, making them stronger and less susceptible to outside interference. LANmark-2000 is a true multimedia cable and is specifically designed to handle voice, video and data simultaneously.


## FEATURES

- Full duplex operation capable over four cable pairs
- Increased usable bandwidth vs. the Category 6 standard
- Documented balance characteristics (LCL/TCL, EL TCTL)
- Reduced attenuation (Insertion Loss)
- ETL Verified to ANSI/TIA-568-C.2

## BENEFITS

- Provides additional performance margin to reliably support Gigabit Ethernet in high-noise environments
- Provides bandwidth required for multimedia, broadband video, analog video and other future applications
- Balance characteristics improve overall cable performance and reduce cable emissions which results in reduced transmission errors
- Characterized to 600 MHz, 350 MHz greater than the standard

## CONSTRUCTION

Bare copper wire insulated with polyethylene (non-plenum) or insulated with FEP (plenum). Two insulated conductors twisted together to form a pair and four such pairs laid up with crossfiller to form the basic unit jacketed with flame-retardant PVC.

- *When used in a two-connector channel, LANmark-2000 is guaranteed out to 116 meters. Contact us for details.*

## FLAME RATING

| | |
|---|---|
| Non-plenum | UL 1666, CMR |
| Plenum | NFPA 262, CMP |
| Patch | UL 1685, CM, IEC 332-1 |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>UL 444 and C22.2 No. 214-02 |
| International | ISO/IEC 11801-2nd Edition Category 6<br>EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

Berk-Tek's LANmark-2000 UTP cable is intended for high-speed data and multi-media applications including:

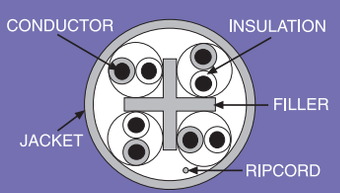
| | | |
|---|---|---|
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| TIA/EIA-854 | 1000BASE-TX | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |
| IP Video | | |
| Broadband Video | | |

## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## AT A GLANCE

- Tested to 600 MHz
- Ideal for PoE and VoIP
- CCTV support
- Ideal for 2.5G and 5.0G




| PART NUMBERS | CMP | CMR | PATCH* |
|---|---|---|---|
| Light Gray 1000 ft. Reel in a Box | 10167307 | 10167479 | 10033598 |
| White 1000 ft. Reel in a Box | 10167312 | 10167481 | 10033821 |
| Blue 1000 ft. Reel in a Box | 10163780 | 10167477 | 10033822 |
| Yellow 1000 ft. Reel in a Box | 10167309 | 10167483 | 10033823 |
| Green 1000 ft. Reel in a Box | 10170669 | 10170688 | 10033825 |

Additional jacket colors available.
*Reels only

| TECHNICAL DATA — PHYSICAL | CMP | CMR | PATCH |
|---|---|---|---|
| Conductor | 23 AWG solid bare copper | 23 AWG solid bare copper | 24 AWG tinned stranded copper |
| Conductor Diameter | 0.022 in. | 0.022 in. | 0.024 in. |
| Insulated Conductor Diameter | 0.037 in. | 0.039 in. | 0.040 in. |
| Cable Diameter | 0.220 in. | 0.231 in. | 0.250 in. |
| Cable Weight | 30 lb./kft. | 27 lb./kft. | 28 lb./kft. |
| Min. Bend Radius | 1.0 in. | 1.0 in. | 1.0 in. |
| | | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** | **PATCH** |
| Velocity of Propagation | 72% nom. | 72% nom. | 67% nom. |
| Time Delay Skew | 45 nsec/100 m max. | 45 nsec/100 m max. | 45 nsec/100 m max. |

Berk-Tek® A NEXANS COMPANY



RoHS COMPLIANT

# LANMARK™-1000

UTP/4-PAIR
ENHANCED CATEGORY 6

**LANMARK-1000** is an ANSI/TIA Enhanced Category 6 verified cable that is ideal for Gigabit Ethernet network applications. Exceptional electrical characteristics include: PSNEXT, PSACR, PSELFEXT, ELFEXT, RL and LCL/TCL/EL TCTL (balance). LANmark-1000 was the first cable in the industry which set requirements for cable balance. Cable balance helps protect the network from the damaging effects of outside noise sources.

## FEATURES

- Full power sum performance
- Documented balance characteristics (LCL, LCTL)
- ETL Verified to ANSI/TIA-568-C.2
- Available in smartPAK 1500 ft. pull-box packaging

## BENEFITS

- Optimal support for Gigabit Ethernet with headroom
- Power sum characterization gives highest performance for existing applications
- Addition of balance requirements improves overall cable performance and reduces transmission errors
- smartPAK boxes reduce cable scrap and increase install efficiency
- Characterized to 550 MHz, 300 MHz greater than the standard

## CONSTRUCTION

Bare copper wire insulated with polyethylene (non-plenum) or insulated with FEP (plenum). Two insulated conductors twisted together to form a pair and four such pairs laid up with crossfiller to form the basic unit, jacketed with flame-retardant PVC.

## FLAME RATING

| | |
|---|---|
| Non-plenum | UL 1666, CMR, IEC 332-1 |
| Plenum | NFPA 262, CMP |
| Patch | UL 1685, CM, IEC 332-1 |
| Low-Smoke | |
| Zero-Halogen | IEC 332-1 |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>UL 444 and C22.2<br>No. 214-02 |
| International | ISO/IEC 11801-<br>2nd Edition Category 6<br>EU Directive<br>2006/96/EC (Low Voltage)<br>EU Directive<br>2011/65/EU (RoHS) |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| TIA/EIA-854 | 1000BASE-TX | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |


## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## New smartPAK 1500 ft. Boxes

| PART NUMBERS | CMP | lbs./box | CMR | lbs./box |
|---|---|---|---|---|
| Blue 1500 ft. smartPAK Box | 11074694 | 45 | 11074701 | 38 |
| White 1500 ft. smartPAK Box | 11074738 | 45 | 11074740 | 38 |
| Gray 1500 ft. smartPAK Box | 11074739 | 45 | 11074741 | 38 |

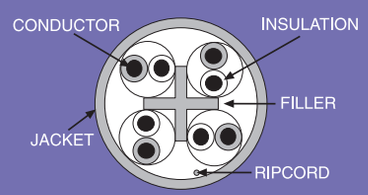
| PART NUMBERS | CMP | CMR | PATCH* |
|---|---|---|---|
| Gray 1000 ft. Tek Pak Box | 10032026 | 10032452 | 10032678 |
| White 1000 ft. Tek Pak Box | 10032092 | 10032459 | 10032679 |
| Blue 1000 ft. Tek Pak Box | 10032094 | 10032455 | 10032680 |
| Yellow 1000 ft. Tek Pak Box | 10032090 | 10032461 | 10032681 |
| Green 1000 ft. Tek Pak Box | 10032097 | 10032479 | 10032693 |

Additional jacket colors available.
*Reels only

| TECHNICAL DATA — PHYSICAL | CMP | CMR | PATCH |
|---|---|---|---|
| Conductor | 23 AWG solid bare copper | 23 AWG solid bare copper | 24 AWG tinned stranded copper |
| Conductor Diameter | 0.022 in. | 0.022 in. | 0.024 in. |
| Insulated Conductor Diameter | 0.040 in. | 0.039 in. | 0.040 in. |
| Cable Diameter | 0.230 in. | 0.230 in. | 0.220 in. |
| Cable Weight | 31 lb./kft. | 25 lb./kft. | 25 lb./kft. |
| Min. Bend Radius | 1.0 in. | 1.0 in. | 1.0 in. |
| | | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** | **PATCH** |
| Velocity of Propagation | 68% nom. | 68% nom. | 68% nom. |
| Time Delay Skew | 45 nsec/100 m max. | 45 nsec/100 m max. | 45 nsec/100 m max. |

## AT A GLANCE

- Tested to 550 MHz
- 1000BASE-T capable
- Cable balance reduces effects of noise
- Ideal for 2.5G




RoHS COMPLIANT



Berk-Tek®
A NEXANS COMPANY

# LANMARK™-6 SMARTPAK CAN MEAN SIGNIFICANTLY MORE PROFIT FOR YOU!

## LANmark-6 in our unique smartPAK packaging will save you time and money—and those savings go right to your bottom line.

Everyone knows that LANmark-6 is an outstanding choice for Category 6 networks. LANmark-6's extraordinary performance and reliability are legendary in an environment of ever increasing user community bandwidth and application demand. But the advantages of LANmark-6 don't end there.



For many networks, much of the total cost is in installation labor, and with budgets as tight as they are, a penny saved is truly a penny earned. And that's why LANmark-6 is such a good choice. Here's why.

### NO FILLER

LANmark-6 has an innovative design that requires no filler in the cable construction. For an installer, the LANmark-6 design can save 10 seconds in labor per drop. And in a 150,000 foot project, those savings add up.

### ELIMINATE STAR (*) PASSES

LANmark-6 offers 2dB of guaranteed headroom over the standard, allowing you to minimize or eliminate star (*) passes

### SMARTPAK IS SMART

Berk-Tek's convenient smartPAK packaging means 50 percent more cable per box. That's less trips to the truck, more pulls per box and less scrap when you're done. Customers have told us the average pull is 150 feet, so why buy in 1,000 foot boxes? We agree.

When the budget is tight, and network performance is still demanding, count on the verified and guaranteed performance of LANmark-6 and the installation efficiency and cost-savings of LANmark-6 smartPAK. Then watch the savings go right to your bottom line.

**PROJECT:** 150,000'; 150' average run (1,000 drops); 2 terminations per drop; assume 10% scrap (15,000' or 100' per 1,000' box)

| ITEM | LANMARK-6 SMARTPAK 1,500 ft. | COMPETITOR | % OR TIME | PER 1,000 ft. |
|---|---|---|---|---|
| Number of boxes | 100 | 150 | N/A | N/A |
| Price per 1,000 ft. | $250 | $240 | 4% more expensive | ($10.00) |
| Filler or Tape | No | Yes | 6 drops at 10 sec. each | $1.00 |
| "*" PASS | No | Yes | 5% of drops is typical | $2.00† |
| | | | 6 min. to make each PASS | |
| | | | 50 x 6 min. = 300 min.** | |
| smartPAK | Yes | No | 20% less set-up/tear down | $13.75 |
| | | | 20% less moving | |
| | | | 10% less scrap (15 ft.) | |
| | | | | + $6.75 |

AVG. EXTRA PROFIT: $1,012

**Labor Per 1,000 ft. Box:**

| ACTIVITY | % TIME | ACTUAL (average) | PER SMARTPAK |
|---|---|---|---|
| Move Boxes | 10% | 20 min. | 16 min.* |
| Set-up/Tear Down | 15% | 30 min. | 24 min.* |
| Pull and Terminate | 55% | 118 min. | 118 min. |
| Test | 20% | 42 min. | 42 min. |
| **Total** | **100%** | **~ 210 min.** | **200 min. (10)** |

**150 boxes and $6.75 per box savings = $1,012 EXTRA PROFIT!**

*Conservative estimates of 20% time savings with each box holding 50% more cable than standard 1,000 foot boxes. Scrap savings is 10% of 150 feet = 15 feet x $0.25 per foot = $3.75
**Assume installation cost is $60 per hour or $1 per minute
†5% of 1,000 = 50 "*" PASS x 6 min. = 300 min./150 boxes = $2 per box

# LANMARK™-6

UTP/4-PAIR
CATEGORY 6

Berk-Tek's **LANMARK-6** features a reduced diameter compared to other Category 6 UTP cables, and delivers 2 dB of headroom on the important characteristics of NEXT, PSNEXT, ACR, and PSACR. This is an ANSI/TIA Category 6 verified cable, constructed without a center spline for easy installation and termination. LANmark-6 is capable of transmitting applications such as 1000BASE-T. It is ideal for network applications that extend to 250 MHz. LANmark-6 is available in both CMP and CMR and conforms to ANSI/TIA-568-C.2 and ISO/IEC 11801 2nd Edition Class E Category 6 requirements.

## FEATURES

- Inexpensive compact design with no center spline and an OD of 0.192"
- Available in smartPAK 1500 ft. pull-box packaging
- Meets the requirements of ANSI/TIA-568-C.2
- Usable bandwidth up to 250 MHz
- Delivered in compact, strong, easy to identify boxes

## BENEFITS

- smartPAK boxes reduce cable scrap and increase install efficiency
- Simplified installation
- Cost-effective, entry-level Category 6 solution
- Superior box design allows cable to be pulled easily from the box with minimum kinking
- Compact box design takes up less shelf space
- Characterized to 500 MHz, 250 MHz greater than the standard

## CONSTRUCTION

Bare copper wire insulated with polyethylene. Two insulated conductors twisted together to form a pair and four such pairs cabled to form the basic unit, jacketed with flame-retardant PVC.

## FLAME RATING

| | |
|---|---|
| Non-Plenum | UL 1666, CMR, IEC 332-1 |
| Plenum | NFPA 262, CMP |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>UL 444 and C22.2 No. 214-02 |
| International | ISO/IEC 11801-2nd Edition Category 6<br>EU Directive 2006/96/EC (Low Voltage)<br>EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

Berk-Tek's LANmark-6 UTP cable is intended for high-speed data applications including:

| | | |
|---|---|---|
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| TIA/EIA-854 | 1000BASE-TX | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |


### TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## New smartPAK 1500 ft. Boxes

| PART NUMBERS | CMP | lbs./box | CMR | lbs./box |
|---|---|---|---|---|
| Blue 1500 ft. smartPAK Box | 11074702 | 44 | 11074703 | 33 |
| White 1500 ft. smartPAK Box | 11074742 | 44 | 11074744 | 33 |
| Gray 1500 ft. smartPAK Box | 11074743 | 44 | 11074745 | 33 |

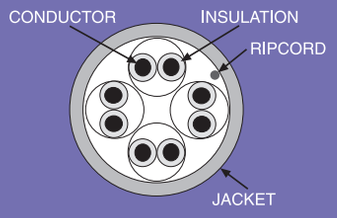
| PART NUMBERS | CMP | CMR |
|---|---|---|
| Gray 1000 ft. Tek Pak Box | 10132983 | 10136338 |
| White 1000 ft. Tek Pak Box | 10136230 | 10136340 |
| Blue 1000 ft. Tek Pak Box | 10136226 | 10136339 |
| Yellow 1000 ft. Tek Pak Box | 10136749 | 10136753 |
| Green 1000 ft. Tek Pak Box | 10136748 | 10136752 |

Additional jacket colors available.

| TECHNICAL DATA — PHYSICAL | CMP | CMR |
|---|---|---|
| Conductor | 23 AWG bare copper | 23 AWG bare copper |
| Conductor Diameter | 0.023 in. | 0.022 in. |
| Insulated Conductor Diameter | 0.041 in. | 0.039 in. |
| Cable Diameter | 0.220 in. | 0.210 in. |
| Cable Weight | 29 lb./kft. | 22 lb./kft. |
| Min. Bend Radius | 1.0 in. | 1.0 in. |
| | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** |
| Velocity of Propagation | 67% nom. | 69% nom. |
| Time Delay Skew | 45 nsec/100 m max. | 45 nsec/100 m max. |

## AT A GLANCE

- Guaranteed to 250 MHz
- Cost-effective Category 6 solution
- No center spline
- Ideal for 1.0G




RoHS COMPLIANT



Berk-Tek®
A NEXANS COMPANY

# LANMARK™-6 OSP

UTP/4-PAIR

CATEGORY 6 OSP


Berk-Tek's **LANMARK-6 OSP** (Outside Plant) Standard Category 6 UTP cables are designed for outside applications, either aerial or buried in conduit or duct, where building-to-building interconnections must be made.

## FEATURES

- Meets the requirements of ANSI/TIA-568-C.2
- Usable bandwidth up to 250 MHz
- Fully water blocked

## BENEFITS

- Can be used to interconnect buildings or can be run beneath a slab in duct or conduit
- Simplifies structured cabling solution preserving long-term network investment
- Meets NEC requirement for cable in wet locations

## CONSTRUCTION

Bare copper wire insulated with polyethylene. Two insulated conductors twisted together to form a pair and four such pairs cabled together around a cross-filler to form the basic unit. This basic unit is injected with a water-resistant flooding compound and jacketed with UV resistant polyethylene.

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>ANSI/ICEA S-90-661 |
| International | ISO/IEC 11801<br>EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

Berk-Tek's LANmark-6 OSP UTP cable is intended for high-speed data applications including:

| | | |
|---|---|---|
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| TIA/EIA-854 | 1000BASE-TX | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |

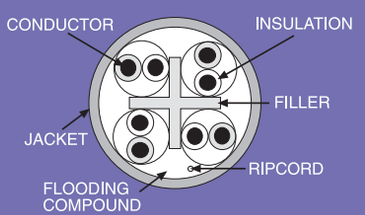
| TEMPERATURE RATING | |
|---|---|
| | OSP |
| OPERATION | -40°C to +70°C |
| INSTALLATION | 0°C to +60°C |

| PART NUMBERS | OSP |
|---|---|
| Black 1000 ft. Reel | 10139885 |

| TECHNICAL DATA — PHYSICAL | OSP |
|---|---|
| Conductor | 24 AWG solid bare copper |
| Conductor Diameter | 0.021 in. |
| Insulated Conductor Diameter | 0.042 in. |
| Cable Diameter | 0.250 in. |
| Cable Weight | 28 lb./kft. |
| Cable Jacket | Weather resistant polyethylene |
| Min. Bend Radius | 1.0 in. |
| | |
| **TECHNICAL DATA — ELECTRICAL** | **OSP** |
| Velocity of Propagation | 62% nom. |
| Time Delay Skew | 45 nsec/100 m max. |

## AT A GLANCE

- 0-250 MHz
- Supports 1000BASE-TX
- Outdoor and wet environments
- Specified with a 5% allowance on propagation delay




Berk-Tek® A NEXANS COMPANY



RoHS COMPLIANT

# TEKPATCH MINI-6 28 AWG PATCH CABLE

UTP/4-PAIR
CATEGORY 6

At 56% lighter, with a 40% smaller bend radius and 55% smaller cross-sectional area than standard Category 6 patch cables, **TEKPATCH MINI-6** patch cable simplifies routing and reduces crowding in racks and pathways. TekPatch Mini-6 is the industry's smallest and lightest patch cable available capable of creating Category 6 compliant patch cords of up to 6 meters in length to be used in combination with a 90 meter horizontal channel segment.

## FEATURES

- Industry-leading OD of 0.146" for a 55% smaller cross-sectional area
- Small bend radius of 0.60"
- 56% lighter than standard Category 6 patch cable

## BENEFITS

- Small diameter provides for optimal routing within tight racks and cabinets
- Optimized airflow
- Lightweight
- Extremely flexible

## CONSTRUCTION

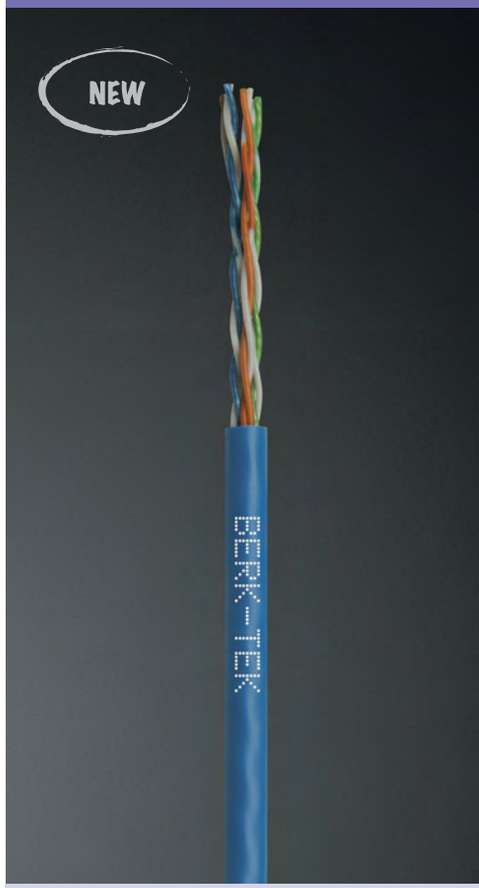
28 AWG, stranded tinned copper wire insulated with polyethylene. Two insulated conductors twisted together to form a pair and four such pairs cabled to form the basic unit, jacketed with flame-retardant PVC.

## FLAME RATING

| | |
|---|---|
| Patch | NEC Type CM 75°C |

## STANDARDS

| | |
|---|---|
| North American | UL 444 and C22.2 No. 214-02 |
| International | EU Directive 2006/2/96/EC (Low Voltage)<br>EU Directive 2011/65/EU (RoHS) |




| PART NUMBERS | PATCH |
|---|---|
| Gray 1000 ft. Reel | 11082775 |
| White 1000 ft. Reel | 11076605 |
| Blue 1000 ft. Reel | 11078766 |
| Yellow 1000 ft. Reel | 11082780 |
| Green 1000 ft. Reel | 11082776 |

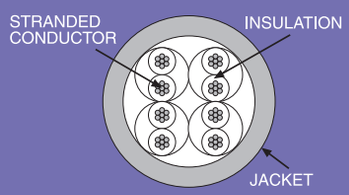
| TECHNICAL DATA — PHYSICAL | PATCH |
|---|---|
| Conductor | 28 AWG stranded tinned copper |
| Conductor Diameter | 0.015 in. |
| Insulated Conductor Diameter | 0.025 in. |
| Cable Diameter | 0.146 in. |
| Cable Weight | 11 lb./kft. |
| Min. Bend Radius | 0.60 in. |
| | |
| **TECHNICAL DATA — ELECTRICAL** | **PATCH** |
| Velocity of Propagation | 70% nom. |
| Time Delay Skew | 45 nsec/100 m max. |

## TEMPERATURE RATING

| | CM |
|---|---|
| OPERATION | -20°C to +70°C |
| INSTALLATION | 0°C to +50°C |

## AT A GLANCE

- Industry-leading OD of 0.146"
- Small diameter allows for optimized airflow
- Extremely flexible




RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# LANMARK-350™

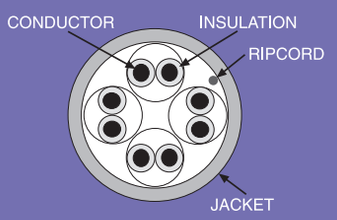
UTP/4-PAIR
PREMIUM CATEGORY 5e


## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## AT A GLANCE

- Tested to 450 MHz
- Ideal for 100BASE-TX
- Headroom above Category 5e




Berk-Tek's **LANMARK-350** Premium Category 5e UTP cables are ideally suited to support 100BASE-TX Ethernet. Tested up to 450 MHz, the guaranteed performance of this cable far exceeds the ANSI/TIA-568-C.2 and ISO/IEC 11801 Category 5e horizontal cable requirements for PSNEXT, attenuation, structural return loss, attenuation-to-crosstalk ratio (ACR) and impedance.

## FEATURES

- Small, round design
- Available in smartPAK 1500 ft. pull-box packaging
- ETL Verified to ANSI/TIA-568-C.2 and ISO/IEC 11801

## BENEFITS

- Reliably supports 100BASE-TX Ethernet
- smartPAK boxes reduce cable scrap and increase install efficiency
- Reduced installation costs and maintenance
- Lower bit error rates, increases network efficiency and uptime
- Characterized to 450 MHz, 350 MHz greater than standard

## CONSTRUCTION

Bare copper wire insulated with polyethylene (non-plenum) or FEP (plenum). Two insulated conductors twisted together to form a pair and four such pairs cabled to form the basic unit jacketed with flame-retardant PVC.

## FLAME RATING

| | |
|---|---|
| Non-Plenum | UL 1666, CMR, IEC 332-1 |
| Plenum | NFPA 262, CMP |
| Patch | UL 1685, CM, IEC 332-1 |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA/EIA-568-C.2<br>UL 444 and C22.2<br>No. 214-02 |
| International | ISO/IEC 11801-<br>2nd Edition Category 5<br>EU Directive<br>2006/96/EC (Low Voltage)<br>EU Directive<br>2011/65/EU (RoHS) |

## APPLICATIONS

Berk-Tek's LANmark-350 Premium Category 5e UTP cable is intended for high-speed data applications up to 350 MHz including:

| | | |
|---|---|---|
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |

| New smartPAK 1500 ft. Boxes | | | | |
|---|---|---|---|---|
| PART NUMBERS | CMP | lbs./box | CMR | lbs./box |
| Blue 1500 ft. smartPAK Box | 11074707 | 36 | 11074708 | 30 |
| White 1500 ft. smartPAK Box | 11074750 | 36 | 11074752 | 30 |
| Gray 1500 ft. smartPAK Box | 11074751 | 36 | 11074753 | 30 |

| PART NUMBERS | CMP | CMR | PATCH* |
|---|---|---|---|
| Gray 1000 ft. Tek Pak Box | 10032079 | 10032447 | 10032649 |
| White 1000 ft. Tek Pak Box | 10032072 | 10032434 | 10032643 |
| Blue 1000 ft. Tek Pak Box | 10032065 | 10032426 | 10032639 |
| Yellow 1000 ft. Tek Pak Box | 10032060 | 10032419 | 10032637 |
| Green 1000 ft. Tek Pak Box | 10032086 | 10032428 | 10032647 |

Additional jacket colors and packaging types available.
*Reels

| TECHNICAL DATA — PHYSICAL | CMP | CMR | PATCH |
|---|---|---|---|
| Conductor | 24 AWG solid bare copper | 24 AWG solid bare copper | 24 AWG tinned stranded copper |
| Conductor Diameter | 0.020 in. | 0.020 in. | 0.024 in. |
| Insulated Conductor Diameter | 0.036 in. | 0.036 in. | 0.040 in. |
| Cable Diameter | 0.210 in. | 0.187 in. | 0.220 in. |
| Cable Weight | 24 lb./kft. | 20 lb./kft. | 23 lb./kft. |
| Min. Bend Radius | 1.0 in. | 1.0 in. | 1.0 in. |
| | | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** | **PATCH** |
| Velocity of Propagation | 70% nom. | 70% nom. | 69% nom. |
| Time Delay Skew | 45 nsec/100 m max. | 45 nsec/100 m max. | 45 nsec/100 m max. |

Berk-Tek® A NEXANS COMPANY



RoHS COMPLIANT

Berk-Tek's **HYPER PLUS 5e** Standard Category 5e UTP cables are designed for horizontal network and voice applications in a structured cabling network to connect between the user outlet and horizontal cross-connect.

# HYPER PLUS 5e

UTP/4-PAIR
CATEGORY 5e


## FEATURES

- Supports most data and voice applications
- Available in smartPAK 1500 ft. pull-box packaging
- ETL Verified to ANSI/TIA-568-C.2

## BENEFITS

- smartPAK boxes reduce cable scrap and increase install efficiency
- Universally accepted design for global commercial network installations
- Simplified structured cabling solution preserves long-term network investment
- Characterized to 350 MHz, 250 MHz greater than standard

## CONSTRUCTION

Bare copper wire insulated with thermoplastic. Two insulated conductors twisted together to form a pair and four such pairs cabled to form the basic unit, jacketed with flame-retardant PVC.

## FLAME RATING

| | |
|---|---|
| Non-Plenum | UL 1666, CMR |
| Plenum | NFPA 262, CMP |
| Patch | UL 1685, CM |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>UL 444 and C22.2 No. 214-02 |
| International | ISO/IEC 11801-2nd Edition Category 5<br>EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

Berk-Tek's Hyper Plus 5e Standard Category 5e UTP cable is intended for high-speed data applications up to 100 MHz including:

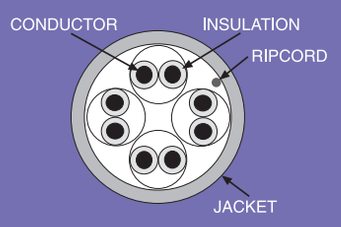
| | | |
|---|---|---|
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |

## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## AT A GLANCE

- Tested to 350 MHz
- Cost effective choice for voice/data




## New smartPAK 1500 ft. Boxes

| PART NUMBERS | CMP | lbs./box | CMR | lbs./box |
|---|---|---|---|---|
| Blue 1500 ft. smartPAK Box | 11074705 | 38 | 11074706 | 27 |
| White 1500 ft. smartPAK Box | 11074746 | 38 | 11074748 | 27 |
| Gray 1500 ft. smartPAK Box | 11074747 | 38 | 11074749 | 27 |

| PART NUMBERS | CMP | CMR | PATCH* |
|---|---|---|---|
| Gray 1000 ft. Tek Pak Box | 10032207 | 10032510 | 10032718 |
| White 1000 ft. Tek Pak Box | 10032223 | 10032535 | 10032716 |
| Blue 1000 ft. Tek Pak Box | 10032227 | 10032528 | 10032713 |
| Yellow 1000 ft. Tek Pak Box | 10032235 | 10032531 | 10032711 |
| Green 1000 ft. Tek Pak Box | 10032232 | 10032539 | 10032709 |

Additional jacket colors and packaging types available.
*Reels

| TECHNICAL DATA — PHYSICAL | CMP | CMR | PATCH |
|---|---|---|---|
| Conductor | 24 AWG solid bare copper | 24 AWG solid bare copper | 24 AWG tinned stranded copper |
| Conductor Diameter | 0.020 in. | 0.020 in. | 0.024 in. |
| Insulated Conductor Diameter | 0.038 in. | 0.035 in. | 0.040 in. |
| Cable Diameter | 0.210 in. | 0.187 in. | 0.220 in. |
| Cable Weight | 25 lb./kft. | 18 lb./kft. | 23 lb./kft. |
| Min. Bend Radius | 1.0 in. | 1.0 in. | 1.0 in. |
| | | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** | **PATCH** |
| Velocity of Propagation | 66% nom. | 70% nom. | 69% nom. |
| Time Delay Skew | 45 nsec/100 m max. | 25 nsec/100 m max. | 45 nsec/100 m max. |
| Input Impedance (1-100 MHz) | 100 ohm +/- 15% | 100 ohm +/- 15% | 100 ohm +/- 15% |

RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# HYPER PLUS 5e OSP

UTP/4-PAIR

CATEGORY 5e OSP


Berk-Tek's **HYPER PLUS 5e OSP** (Outside Plant) Standard Category 5e UTP cables are designed for outside applications, either aerial or buried in conduit or duct, where building-to-building interconnections must be made.

## FEATURES

- Supports most data and voice applications
- Meets ANSI/ICEA 5-56-434 Standard for Polyolefin Insulated Communications Cables for Outdoor Use
- ETL Verified to ANSI/TIA-568-C.2
- Fully water blocked

## BENEFITS

- Can be used to interconnect buildings or can be run beneath a slab in duct or conduit
- Simplified structured cabling solution preserves long-term network investment
- Meets NEC requirement for cable in wet locations

## CONSTRUCTION

Bare copper wire insulated with polyethylene. Two insulated conductors twisted together to form a pair and four such pairs cabled to form the basic unit which is injected with a water resistant flooding compound and jacketed with UV resistant polyethylene.

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>ANSI/ICEA 5-56-434 |
| International | ISO/IEC 11801-<br>2nd Edition Category 5<br>EU Directive<br>2002/95/EC (RoHS) |

## APPLICATIONS

Berk-Tek's Hyper Plus 5e OSP UTP cable is intended for high-speed data applications up to 100 MHz including:

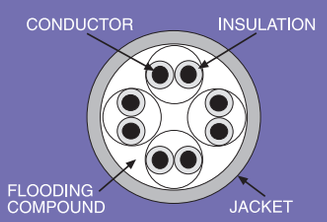
| | | |
|---|---|---|
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |

## TEMPERATURE RATING

| | OSP |
|---|---|
| OPERATION | -20°C to +60°C |
| INSTALLATION | -20°C to +60°C |

## AT A GLANCE

- 0-100 MHz
- Supports 100BASE-TX
- Outdoor and wet environments




| PART NUMBERS | OSP |
|---|---|
| Black 1000 ft. Reel | 10071496 |

| TECHNICAL DATA — PHYSICAL | OSP |
|---|---|
| Conductor | 24 AWG solid bare copper |
| Conductor Diameter | 0.020 in. |
| Insulated Conductor Diameter | 0.038 in. |
| Cable Diameter | 0.207 in. |
| Cable Weight | 20 lb./kft. |
| Cable Jacket | Weather resistant polyethylene |
| Min. Bend Radius | 1.00 in. |
| | |
| **TECHNICAL DATA — ELECTRICAL** | **OSP** |
| Velocity of Propagation | 72% nom. |
| Time Delay Skew | 25 nsec/100 m max. |

Berk-Tek® A NEXANS COMPANY



RoHS COMPLIANT

Berk-Tek's **CATEGORY 3 UTP** cables are designed for voice applications. This Category 3, 4-pair UTP cable is tested and guaranteed to meet ANSI/TIA-568-C.2 horizontal cabling requirements.

# HORIZONTAL VOICE CABLE

UTP/4-PAIR
CATEGORY 3


## FEATURES

- Standard flame-retardant PVC or low-smoke zero-halogen jacket construction
- Supports 10BASE-T, Voice, 100VG-AnyLAN

## BENEFITS

- Universally accepted design for global commercial network installations
- Simplified structured cabling solution

## CONSTRUCTION

Bare copper wire insulated with thermoplastic. Two insulated conductors twisted together to form a pair and four such pairs are cabled and jacketed with flame-retardant PVC.

## FLAME RATING

| | |
|---|---|
| Non-plenum | UL 1666, CMR |
| Plenum | NFPA 262, CMP |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2 |
| | UL 444 and C22.2 No. 214-02 |

## APPLICATIONS

Berk-Tek's LAN-Grade Category 3 UTP cable is intended for voice and data applications up to 16 MHz including:

Ethernet
10BASE-T
100BASE-TX
100BASE-VG AnyLAN
Voice

| PART NUMBERS | CMP | CMR |
|---|---|---|
| Gray 1000 ft. Tek Pak Box | 10032040 | 10032402 |
| White 1000 ft. Tek Pak Box | 10032047 | 10034564 |
| Blue 1000 ft. Tek Pak Box | 10032031 | 10032335 |
| Yellow 1000 ft. Tek Pak Box | 10032051 | 10033336 |

Additional jacket colors and packaging types available.

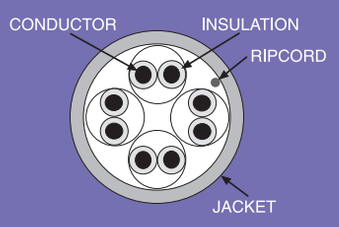
| TECHNICAL DATA — PHYSICAL | CMP | CMR |
|---|---|---|
| Conductor | 24 AWG solid bare copper | 24 AWG solid bare copper |
| Conductor Diameter | 0.020 in. | 0.020 in. |
| Insulated Conductor Diameter | 0.038 in. | 0.035 in. |
| Cable Diameter | 0.210 in. | 0.190 in. |
| Cable Weight | 25 lb./kft. | 18 lb./kft. |
| Min. Bend Radius | 1.0 in. | 1.0 in. |
| | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** |
| Velocity of Propagation | 66% nom. | 70% nom. |
| Time Delay Skew | 45 nsec/100 m | 45 nsec/100 m |

## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +60°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## AT A GLANCE

- 0-16 MHz
- Supports voice applications




RoHS COMPLIANT



Berk-Tek®
A NEXANS COMPANY

# POWER SUM

UTP/25-PAIR

CATEGORY 5e


Berk-Tek's **POWER SUM** CATEGORY 5e 25-pair UTP cable is designed for use in data and voice backbone applications and is ideal for Category 5e zone cabling applications and interconnect cable assemblies.

## FEATURES

- ETL Verified ANSI/TIA-568-C.2 Backbone Cable Power Sum Performance
- Supports 10BASE-T, 100BASE-T, 1000BASE-T, TP-PMD, Voice, Multimedia, 155 Mb/s ATM
- Small-diameter and flexible construction with stable cable geometry
- Ideally suited for backbone, cross-connect and pre-connectorized assemblies

## BENEFITS

- Supports current networking protocols
- Simplified structured cabling solution preserving long-term network investment
- High-performance multi-pair cable for today's most common network interconnections
- Characterized to 250 MHz, 150 MHz greater than the standard

## CONSTRUCTION

Bare copper wire insulated with polyethylene (non-plenum) or FEP (plenum). Two layer core construction jacketed in flame-retardant PVC (non-plenum) or fluoropolymer (plenum).

## FLAME RATING

| | |
|---|---|
| Non-plenum | UL 1666, CMR |
| Plenum | NFPA 262, CMP |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>UL 444 and C22.2 No. 214-02 |
| International | EU Directive 2006/96/EC (Low Voltage)<br>EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

Berk-Tek's 25-pair Power Sum Category 5e cable is intended for voice and data applications including:

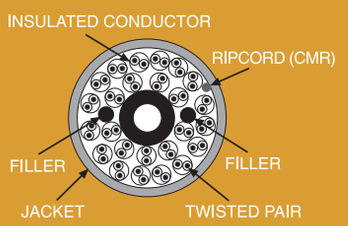
| | | |
|---|---|---|
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |

## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -50°C to +200°C | -20°C to +75°C |
| INSTALLATION | -50°C to +200°C | 0°C to +50°C |

## AT A GLANCE

- Tested to 250 MHz
- Ideal for data center interconnects
- Zone cabling
- Small, flexible design




| PART NUMBERS | CMP | CMR |
|---|---|---|
| Gray 1000 ft. Reel | 10059632 | 10061456 |
| Yellow 1000 ft. Reel | 10119643 | 10189218 |
| Blue 1000 ft. Reel | 10133971 | 10092804 |
| White 1000 ft. Reel | 10089521 | 10080224 |

Additional jacket colors available.

| TECHNICAL DATA — PHYSICAL | CMP | CMR |
|---|---|---|
| Conductor | 24 AWG solid bare copper | 24 AWG solid bare copper |
| Conductor Diameter | 0.021 in. | 0.021 in. |
| Insulated Conductor Diameter | 0.037 in. | 0.038 in. |
| Cable Diameter | 0.455 in. | 0.500 in. |
| Cable Weight | 142 lb./kft. | 132 lb./kft. |
| Min. Bend Radius | 6.9 in. | 5.0 in. |
| | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** |
| Velocity of Propagation | 72% nom. | 72% nom. |
| Time Delay Skew | 45 nsec/100 m | 45 nsec/100 m |

Berk-Tek® A NEXANS COMPANY



RoHS COMPLIANT

Berk-Tek's **POWER SUM** MULTI-PAIR CATEGORY 3 cables are designed for use in voice applications. These cables are used to support building backbone service. They also can be used for interconnecting satellite wiring closets.

# POWER SUM

UTP/25, 50, 100, 200, 300 PAIR
MULTI-PAIR CATEGORY 3

## FEATURES

- UL Verified ANSI/TIA-568-C.2
- Supports 10BASE-T and voice
- Ideally suited for backbone, cross-connect and pre-connectorized assemblies

## BENEFITS

- Assurance that every link will meet the most demanding transmission requirements
- Simplified structured cabling solution preserving long-term network investment

## CONSTRUCTION

Bare copper wire insulated with thermoplastic. Three layer core construction jacketed in flame-retardant PVC.

## FLAME RATING

| | |
|---|---|
| Non-plenum | UL 1666, CMR, IEC 332-1 |
| Plenum | NFPA 262, CMP |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>UL 444 and C22.2 No. 214-02 |
| International | ISO/IEC 11801<br>EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

Berk-Tek's Multi-Pair Category 3 UTP Power Sum Backbone cables are intended for data and voice applications including:

| | |
|---|---|
| Ethernet | 10BASE-T |
| Voice | |

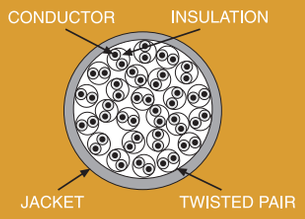

| PART NUMBERS | CMP | CMR |
|---|---|---|
| Gray 1000 ft. Reel (25-pr) | 10032111 | 10032396 |
| Blue 1000 ft. Reel (25-pr) | 10032036 | 10032333 |
| Gray 1000 ft. Reel (50-pr) | 10032112 | 10032471 |
| Gray 1000 ft. Reel (100-pr) | 10032113 | 10032472 |
| Gray 1000 ft. Reel (200-pr) | 10032123 | 10032493 |
| Gray 1000 ft. Reel (300-pr) | 10032124 | 10032494 |

| TECHNICAL DATA — PHYSICAL | CMP | | | | | CMR | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Conductor | 24 AWG solid bare copper | | | | | 24 AWG solid bare copper | | | | |
| Conductor Diameter | 0.020 in. | | | | | 0.020 in. | | | | |
| Insulated Conductor Diameter | 0.037 in. | | | | | 0.037 in. | | | | |
| Cable Diameter | **25-pr** | **50-pr** | **100-pr** | **200-pr** | **300-pr** | **25-pr** | **50-pr** | **100-pr** | **200-pr** | **300-pr** |
| (inches) | 0.400 | 0.496 | 0.651 | 1.012 | 1.300 | 0.380 | 0.525 | 0.774 | 1.100 | 1.300 |
| Cable Weight | **25-pr** | **50-pr** | **100-pr** | **200-pr** | **300-pr** | **25-pr** | **50-pr** | **100-pr** | **200-pr** | **300-pr** |
| (lb./kft.) | 108 | 197 | 385 | 760 | 1116 | 97 | 190 | 390 | 745 | 1100 |
| | | | | | | | | | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | | | | | **CMR** | | | | |
| Velocity of Propagation | **25-pr** | **50-pr** | **100-pr** | **200-pr** | **300-pr** | **25-pr** | **50-pr** | **100-pr** | **200-pr** | **300-pr** |
| (% nom.) | 58 | 58 | 58 | 58 | 58 | 70 | 70 | 70 | 58 | 58 |

| TEMPERATURE RATING | |
|---|---|
| OPERATION | -20°C to +60°C |
| INSTALLATION | 0°C to +50°C |

## AT A GLANCE

- 0-16 MHz
- Ideal interconnect cable
- Voice backbone
- Cost effective design




RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# LANMARK™-10G FTP

F/UTP/4-PAIR
CATEGORY 6A

Berk-Tek's **LANmark-10G FTP** is ideal for applications that require the most advanced cable performance and the additional signal isolation advantages of an FTP design. Completely characterized using power sum crosstalk, LANmark-10G FTP Category 6A introduces new electrical performance parameters to an FTP cable, addressing the needs of full duplex operation over four pairs.


## FEATURES

- ETL Verified to ANSI/TIA-568-C.2
- Outstanding signal isolation
- Resistant to alien crosstalk

## BENEFITS

- Increased signal isolation prevents contaminant noise from entering cabling system
- Completely compliant with IEEE requirements
- Lower bit errors resulting in increased network performance

## CONSTRUCTION

23 AWG, bare copper wire insulated with FEP. Two insulated conductors twisted together with varying layers to form a pair and four pairs laid up to form the basic unit. The cable is shielded with an overall polyester/aluminum foil with stranded tinned copper drain wire and jacketed in flame-retardant PVC.

## FLAME RATING

| | |
|---|---|
| Non-plenum | UL 1666, CMR |
| Plenum | NFPA 262, CMP |

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>UL 444 and C22.2 No. 214-02 |
| International | IEC 61156-5 ED2.0_46C844CDV<br>EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

Berk-Tek's LANmark-10G FTP cable is intended for high-speed data applications up to 500 MHz including:

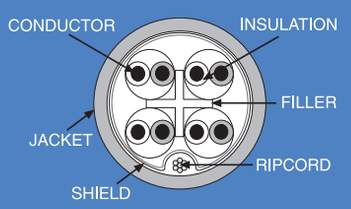
| | | |
|---|---|---|
| IEEE 802.3 | 10GBASE-T | 10 Gb/s |
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| TIA/EIA-854 | 1000BASE-TX | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |

## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## AT A GLANCE

- One overall foil shield
- Guaranteed to Category 6A
- Superior alien crosstalk performance




| PART NUMBERS | CMP | CMR |
|---|---|---|
| Gray 1000 ft. Reel | 10167487 | 10189798 |
| White 1000 ft. Reel | 10167485 | 10189801 |
| Blue 1000 ft. Reel | 10143424 | 10189567 |
| Yellow 1000 ft. Reel | 10167488 | 10189803 |

| TECHNICAL DATA — PHYSICAL | CMP | CMR |
|---|---|---|
| Conductor | 23 AWG solid bare copper | 23 AWG solid bare copper |
| Conductor Diameter | 0.023 in. | 0.022 in. |
| Insulated Conductor Diameter | 0.046 in. | 0.044 in. |
| Cable Diameter | 0.280 in. | 0.300 in. |
| Cable Weight | 40 lb./kft. | 38 lb./kft. |
| Min. Bend Radius | 1.12 in. | 1.20 in. |
| | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** |
| Velocity of Propagation | 72% nom. | 72% nom. |
| Time Delay Skew | 45 nsec/100 m max. | 45 nsec/100 m max. |

Berk-Tek® A NEXANS COMPANY



RoHS COMPLIANT

# LANMARK™-6 FTP

F/UTP/4-PAIR
CATEGORY 6

Berk-Tek's **LANMARK-6 FTP** is the first independently verified Category 6 F/UTP cable. It is ideal for applications that require the most advanced cable performance and the additional signal isolation advantages of an F/UTP design. LANmark-6 FTP is also an excellent choice to support 10 Gigabit Ethernet. Berk-Tek LANmark-6 FTP is the first F/UTP cable to set requirements for cable balance.

## FEATURES

- ETL Verified to ANSI/TIA-568-C.2
- Outstanding signal isolation
- Can be used with RJ-45 style F/UTP connectivity

## BENEFITS

- Increased signal isolation prevents contaminant noise from entering cabling system
- Ideal for supporting 10 Gigabit Ethernet
- Lower bit errors resulting in increased network performance

## CONSTRUCTION

Bare copper wire insulated with foam FEP (plenum) or foam polyethylene (non-plenum). Two insulated conductors twisted together to form a pair and four pairs laid up to form the basic unit. The cable is shielded with an overall polyester/aluminum foil with stranded tinned copper drain wire and jacketed in flame-retardant PVC.

## FLAME RATING

| | |
|---|---|
| Plenum | NFPA 262, CMP |
| Non-plenum | UL 1666, CMR |
| Patch | UL 1581, CM |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>UL 444 and C22.2 No. 214-02 |
| International | ISO/IEC 11801-2nd Edition<br>EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

LANmark-6 FTP cable is intended for high-speed data applications including:

| | | |
|---|---|---|
| IEEE 802.3 | 10GBASE-T | 10 Gb/s |
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| TIA/EIA-854 | 1000BASE-TX | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |


| PART NUMBERS | CMP | CMR | PATCH |
|---|---|---|---|
| Gray 1000 ft. Reel | 10057903 | 10070439 | 10096091 |
| Yellow 1000 ft. Reel | 10062608 | 10090687 | 10123965 |
| Red 1000 ft. Reel | 10063671 | 10074211 | 10189258 |
| Black 1000 ft. Reel | 10063672 | 10074212 | 10189259 |

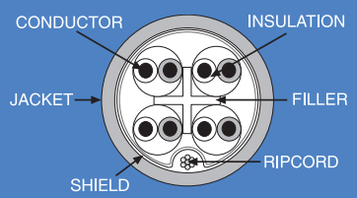
| TECHNICAL DATA — PHYSICAL | CMP | CMR | PATCH |
|---|---|---|---|
| Conductor | 23 AWG solid bare copper | 23 AWG solid bare copper | 26 AWG tinned stranded copper |
| Conductor Diameter | 0.022 in. | 0.022 in. | 0.019 in. |
| Insulated Conductor Diameter | 0.045 in. | 0.045 in. | 0.035 in. |
| Cable Diameter | 0.285 in. | 0.280 in. | 0.230 in. |
| Cable Weight | 40 lb./kft. | 36 lb./kft. | 23 lb./kft. |
| Min. Bend Radius | 1.2 in. | 1.2 in. | 1.0 in. |
| | | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** | **PATCH** |
| Velocity of Propagation | 71% nom. | 68% nom. | 67% nom. |
| Time Delay Skew | 45 nsec/100 m max. | 45 nsec/100 m max. | 45 nsec/100 m max. |

## TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## AT A GLANCE

- Guaranteed to 500 MHz
- Ideal for PoE and VoIP
- CCTV support




RoHS COMPLIANT



Berk-Tek®
A NEXANS COMPANY

# LANMARK™-5e FTP

F/UTP/4-PAIR
CATEGORY 5e

With independently verified performance that meets the ANSI/TIA Category 5e standard, Berk-Tek's **LANMARK-5e FTP** provides the additional signal isolation advantages of an F/UTP design and is ideal for network installations that may be subjected to higher than normal external electromagnetic noise sources.


## FEATURES

- Independently verified to ANSI/TIA Category 5e
- Supports 10BASE-T, 100BASE-T, 1000BASE-T
- Reduces signal emissions for secure transmissions

## BENEFITS

- Reduced cable interference problems in areas of high EMI
- Extends performance limits for network applications thus increasing cabling lifetime
- Reduces signal emissions for secure transmissions

## CONSTRUCTION

Bare copper wire insulated with foam polyethylene (non-plenum) or foam FEP (plenum). Two insulated conductors twisted together to form a pair and four such pairs laid up to form the basic unit. The cable is shielded with an overall polyester aluminum foil with stranded tinned copper drain wire and is jacketed with flame-retardant PVC.

## FLAME RATING

| | |
|---|---|
| Non-plenum | UL 1666, CMR |
| Plenum | NFPA 262, CMP |
| Patch | UL 1581, CM, IEC 332-1 |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/TIA-568-C.2<br>UL 444 and C22.2 No. 214-02 |
| International | ISO/IEC 11801-2nd Edition<br>EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

LANmark-5e FTP cable is intended for high-speed data applications up to 100 MHz including:

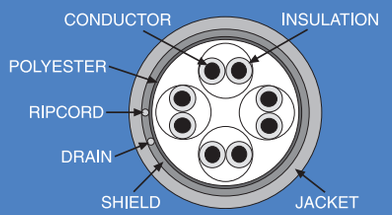
| | | |
|---|---|---|
| IEEE 802.3 | 1000BASE-T | 1 Gb/s |
| ATM | 155 Mb/s | 155 Mb/s |
| IEEE 802.3 | 100BASE-TX | 100 Mb/s |
| CDDI | | 100 Mb/s |
| IEEE 802.3 | 10BASE-T | 10 Mb/s |
| IEEE 802.3af | PoE | |
| IEEE 802.3at | PoE+ | |
| HDBASE-T | | |

### TEMPERATURE RATING

| | CMP | CMR |
|---|---|---|
| OPERATION | -20°C to +75°C | -20°C to +75°C |
| INSTALLATION | 0°C to +50°C | 0°C to +50°C |

## AT A GLANCE

- 0-100 MHz
- 100BASE-TX capable
- Excellent signal isolation




| PART NUMBERS | CMP | CMR | PATCH |
|---|---|---|---|
| Gray 1000 ft. Reel | 10032121 | 10043494 | 10035109 |
| White 1000 ft. Reel | 10047419 | 10047420 | — |
| Blue 1000 ft. Reel | 10034841 | 10051227 | — |
| Red 1000 ft. Reel | 10053566 | 10063684 | — |
| Black 1000 ft. Reel | 10061862 | 10068822 | — |

| TECHNICAL DATA — PHYSICAL | CMP | CMR | PATCH |
|---|---|---|---|
| Conductor | 24 AWG solid bare copper | 24 AWG solid bare copper | 26 AWG tinned stranded copper |
| Conductor Diameter | 0.022 in. | 0.022 in. | 0.019 in. |
| Insulated Conductor Diameter | 0.042 in. | 0.042 in. | 0.035 in. |
| Cable Diameter | 0.235 in. | 0.240 in. | 0.197 in. |
| Cable Weight | 31 lb./kft. | 29 lb./kft. | 20 lb./kft. |
| Min. Bend Radius | 1.0 in. | 1.0 in. | 1.0 in. |
| | | | |
| **TECHNICAL DATA — ELECTRICAL** | **CMP** | **CMR** | **PATCH** |
| Velocity of Propagation | 71% nom. | 74% nom. | 70% nom. |
| Time Delay Skew | 45 nsec/100 m max. | 45 nsec/100 m max. | 45 nsec/100 m max. |

Berk-Tek® A NEXANS COMPANY



RoHS COMPLIANT

Berk-Tek's **T1** cables have been specially designed for interconnection of T-Carrier equipment.

# T1-TELEPHONE EXCHANGE CABLE

PIMF

24 AWG

## FEATURES

- Individually shielded pairs
- General purpose or plenum rated
- Compact size

## BENEFITS

- Supports T1 interconnection applications
- Individual pair isolation allows for maximum protection from outside interference

## CONSTRUCTION

Tinned copper wire with cellular polyethylene (non-plenum) or cellular FEP (plenum). 2 twisted pairs are individually shielded with an aluminum/polyester tape which is in contact with a tinned copper drain wire. The cable core is wrapped by polyester and jacketed with a flame-retardant PVC (non-plenum) or fluoropolymer (plenum) jacket.

## FLAME RATING

| | |
|---|---|
| Non-plenum | UL 1685, CM |
| Plenum | NFPA 262, CMP |

ETL or UL Listed

## STANDARDS

| | |
|---|---|
| North American | ANSI/T1.102<br>UL 444 and C22.2 No. 214-02 |
| International | EU Directive 2011/65/EU (RoHS) |

## APPLICATIONS

T1
DS-1


| PART NUMBERS | CM | CMP | CONDUCTOR AWG | NUMBER OF PAIRS |
|---|---|---|---|---|
| Gray 1000 ft. Reel | 10032394 | 10032053 | 24 | 2 |
| Gray 1000 ft. Reel | — | 10032052 | 22 | 2 |

| TECHNICAL DATA — PHYSICAL | | |
|---|---|---|
| **CONSTRUCTION CHARACTERISTICS** | | |
| Outer Sheath | FR-PVC, Fluoropolymer (CMP) | |
| Color(s) | Gray | |
| **ELECTRICAL CHARACTERISTICS** | **CM** | **CMP** |
| Mutual Capacitance | 14 pF/ft. @ 772 KHz | 12.5 pF/ft. @772 KHz |
| Characteristic Impedance | 100 ± 10 ohm @ 772 KHz | 100 ± 10 ohm @ 772 KHz |
| **TRANSMISSION CHARACTERISTICS** | | |
| Attenuation, max. (dB/1000 ft.) | | 7.0 max. @ 772 KHz |
| Near End Crosstalk (dB/1000 ft.) | | 80.0 @ 1.544 MHz |
| Far End Crosstalk (dB/1000 ft.) | | 85.0 @ 1.544 MHz |
| **USAGE CHARACTERISTICS** | | |
| Packaging | | Reels only |
| Length | | 1,000 feet (305 meters) |

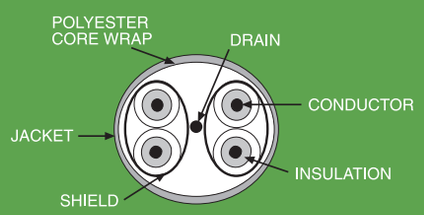
| TECHNICAL DATA — PHYSICAL | 24 CM | 24 CMP | 22 CMP |
|---|---|---|---|
| Conductor | 24 AWG solid tinned copper | 24 AWG solid tinned copper | 22 AWG solid tinned copper |
| Conductor Diameter | 0.020 in. | 0.020 in. | 0.025 in. |
| Insulated Conductor Diameter | 0.052 in. | 0.050 in. | 0.063 in. |
| Cable Diameter (2 PR) | 0.270 x 0.170 in. | 0.200 in. | 0.222 in. |
| Cable Weight (2 PR) | 27 lb./kft. | 19 lb./kft. | 23 lb./kft. |

## TEMPERATURE RATING

| | CMP | CM |
|---|---|---|
| OPERATION | -20°C to +125°C | -20°C to +75°C |
| INSTALLATION | 0°C to +125°C | 0°C to +50°C |

## AT A GLANCE

- T1, DS-1

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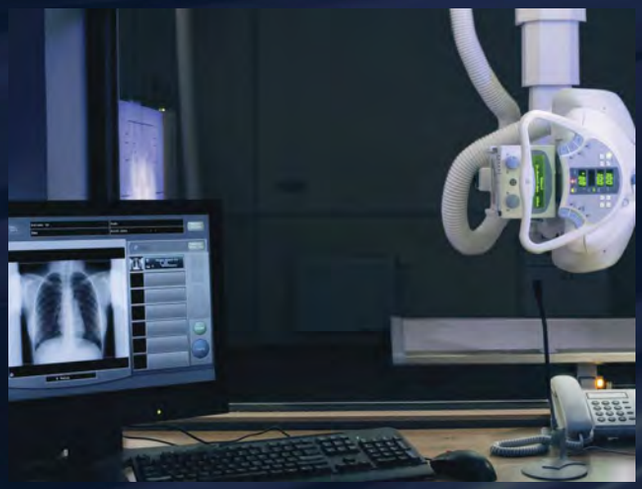


# BERK-TEK OPTICAL FIBER CABLES:
## Performance Excellence Through Continuous Improvement

*Performing to ISO 9001 certification standards and the TL 9000 quality management system helps to drive continuous improvement, consistent quality and on-time delivery.*

With a variety of quality programs ranging in scope from improved visual manufacturing processes to advanced Greenbelt Six Sigma training, the Berk-Tek Fuquay-Varina fiber manufacturing facility is focused on continuously improving the products we manufacture. Our state-of-the-art equipment and data acquisition tools enable us to leverage best practices, track trend data and bring higher quality products to market more quickly and more efficiently.

When you purchase a Berk-Tek fiber optic cable, you can be sure that it has passed rigorous quality testing. Optical testing is conducted at each step of the manufacturing process, enabling us to guarantee every product, every time.

The combination of manufacturing expertise and advanced research and development has given Berk-Tek the honor of many significant firsts, including:

- Adventum®, the first all-dry, loose tube, indoor/outdoor fiber optic cable
- Micro Data Center Plenum, the world's smallest stranded loose tube fiber optic cable construction
- Adventum Tight Buffer, combining the strengths of both loose tube and tight buffer fiber cable constructions
- Highest fiber count available in the industry, 432-fiber Adventum


# PRODUCT HIGHLIGHTS

## MICRO DATA CENTER PLENUM

For installations where space is at a premium, like data centers and storage area networks, Berk-Tek has created just the right cable, the Micro Data Center Plenum cable. The unique design has been granted a patent by the USPTO #7, 609, 926. This cable is up to 50% smaller than typical loose tube, premises distribution or ribbon cable designs of comparable strand counts. MDP cable comes as a preterminated assembly to provide efficient and high-performance installations.

## COMPOSITE SECURITY CABLE

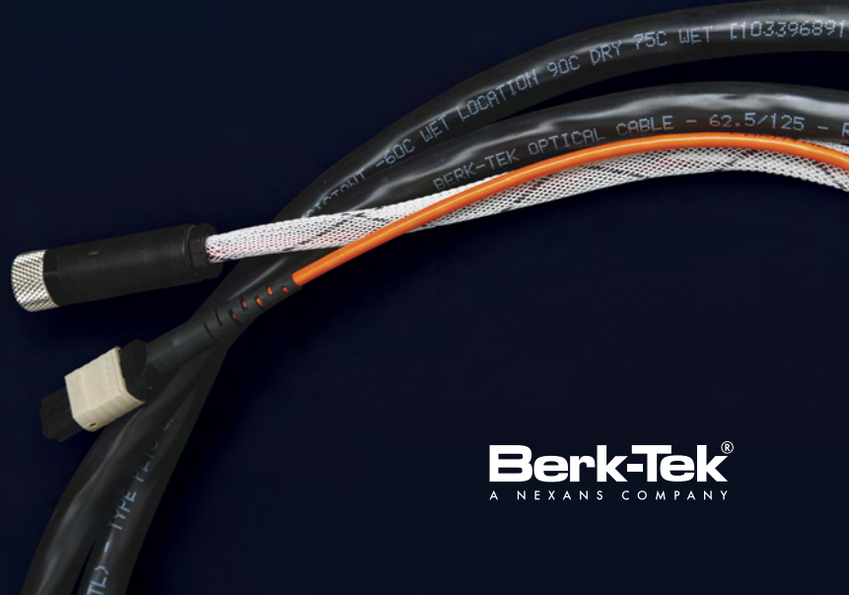
With the convergence of CCTV, building automation systems and other security applications onto the structured cabling system, there is a clear need for a cable that can power a camera while also providing the performance of optical fiber. The Berk-Tek Composite Security cable delivers both high bandwidth optical performance and power to cameras, access or monitoring devices at a distance up to 6,000 ft.

## ADVENTUM® TIGHT BUFFER

The unique design of the Adventum Tight Buffer cable combines the strengths of the Adventum Indoor/Outdoor cable with the convenience of tight-buffered fibers. The cable is fully water blocked with the Berk-Tek DryGel water-blocking system, which means no messy gels to clean. And the tight buffer fiber construction means quick, direct termination with no need for fan-out kits. This is an ideal cable for FTTx applications such as multi-dwelling or multi-tenant units, or it can be used for security applications.

## ADVENTUM

Berk-Tek continues to improve and expand upon the success of the Adventum Indoor/Outdoor fiber optic cable. For certain strand counts we have been able to reduce both the outer diameter and the cable weight through the removal of unnecessary buffer tubes. There is now a side-by-side design for our 24-fiber cables that is more flexible than a traditional round design and allows for better conduit fill ratios. Finally, we continue to extend the range of available fiber counts, with Adventum plenum cable up to 432 fibers.

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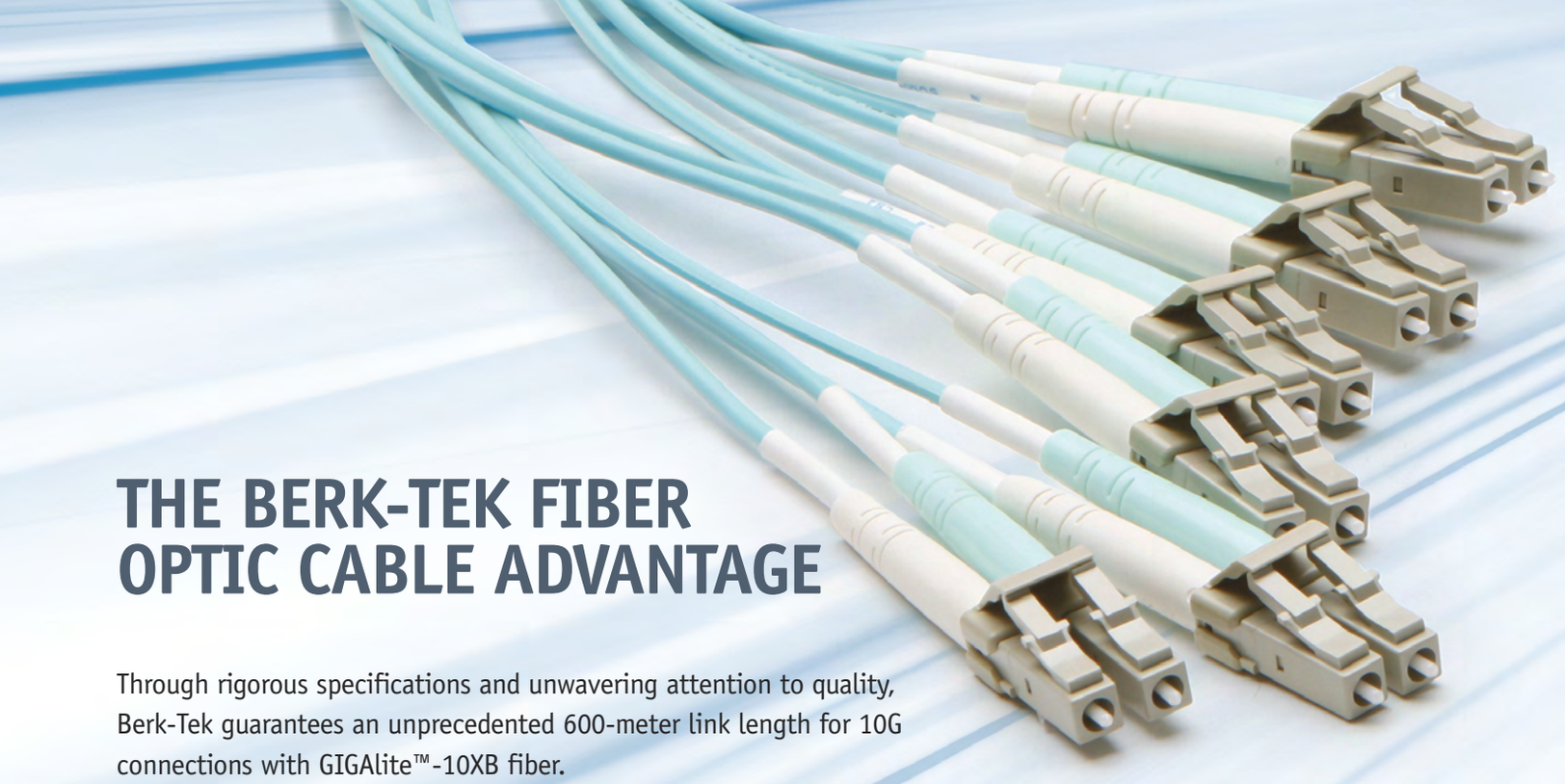


# THE BERK-TEK FIBER OPTIC CABLE ADVANTAGE

Through rigorous specifications and unwavering attention to quality, Berk-Tek guarantees an unprecedented 600-meter link length for 10G connections with GIGAlite™-10XB fiber.

## GIGALITE FIBER

### TIGHTER DIMENSIONAL TOLERANCE

Key factors in ensuring the optimal connection of optical fibers include the geometric dimensions of the core and cladding. Minimally compliant specifications do not deliver GIGAlite performance. Berk-Tek specifies tighter minimum and maximum specifications than TIA and IEC standards, resulting in improved worst case insertion loss thanks to more consistent alignment.

Improvements are also specified for cladding diameter, core/clad concentricity, non-circularity, and others. When combined, these improved attributes result in a significantly improved worst case insertion loss. As data rates continue to climb, the allowable loss in the link shrinks. The GIGAlite fiber advantage allows users to keep ahead of these advances.

### BETTER BANDWIDTH SPECIFICATION

In practical terms, higher bandwidth provides increased link length and improved allowable insertion loss. All high bandwidth fiber is measured using a process called DMD (Differential Modal Delay). From that data, TIA allows two different measurements to be used to report the performance:

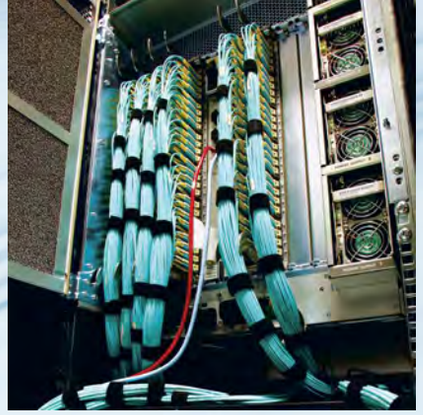
- **DMD Mask:** the DMD data of the measured fiber is compared against several templates. If the performance meets any one of the templates, it is said to pass the test.
- **EMBc:** the DMD data of the measured fiber is used to determine the response with 10 simulated light sources. Each "source" results in a calculated bandwidth (Effective Modal Bandwidth calculated, or EMBc). The lowest value becomes the reported bandwidth of the fiber under test.

There is a debate in the industry about which test method is more accurate, with proponents of each method advocating the benefits of their preferred method.

To meet GIGAlite requirements, optical fibers must pass OM3 and OM4 specifications using both test methods. This assures that the fiber meets both of the accepted test methods and eliminates the uncertainty of "false positives."

### TEKFLEX™

Bend insensitive multimode fibers (BIMMF) have become increasingly popular. The Competence Center at Berk-Tek developed a test method to ensure that these new designs would be compatible with traditional designs as well as supporting future technologies. BIMMF fibers have enabled advanced cable manufacturing techniques, but they also minimize attenuation when cables are installed in basket tray, for example.



# MAXIMIZE DENSITY WITH CABLE CONSTRUCTIONS OPTIMIZED FOR PRE-TERMINATED ASSEMBLIES

Berk-Tek offers the industry's premier fiber optic cable line for the construction of pre-terminated assemblies. Our complete line of indoor, outdoor and indoor/outdoor cable constructions ensure you have the flexibility to select the proper cable for your application. Allowing you to design the highest performing and most reliable solution with the lowest cost of ownership.

Cabling options include the compact and rugged Micro Data Center Plenum (MDP) and High Density Distribution Cable (ACP) as well as Adventum® indoor/outdoor cable, ArmorTek™ interlocking armor, Premise Distribution and Ribbon cable constructions. All constructions feature laser-optimized 50 micron GIGAlite™, GIGAlite-10 and GIGAlite-10XB Enhanced Multimode, as well as our standard 62.5 micron multimode fibers and low water peak single-mode fibers.

*MDP (Micro Data Center Plenum) Cable*

*High Density Distribution Cable (ACP)*


## OPTICAL CABLING INNOVATIONS

**MDP (Micro Data Center Plenum)** indoor cables are designed specifically to enable high density backbone connectivity in existing or new data centers. These rugged cables are available in fiber counts from four to 288 optical fibers. This design offers dramatically reduced cable diameters of up to 50% over typical indoor/outdoor and premises distribution style cable offerings. These cables are pre-terminated using industry standard MPO (MTP®)* multi-fiber optical connectors, or LC connectors. They provide the highest density, most flexible backbone connectivity solution available for data centers and SAN installations.

**High Density Distribution Cable (ACP)** is a compact, indoor-only loose tube cable with the strength to provide more robust handling over the lifespan of your installation. By including aramid within the 3.0 mm tube containing the optical fibers, this design delivers both a compact cross-section and superior strain relief capabilities. With fiber counts of up to 432 optical strands, ACP is an outstanding choice to support the parallel transmission requirements of 40/100G Ethernet.

**MTP is a registered trademark of US Conec, LTD.*

▶ *MDP cable is only available as pre-terminated assemblies. Contact your sales representative for more details.*

RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY


# ONEREACH™

## Take PoE, PoE+, and now High PoE simplicity and gigabit capability to new distances.

## One hundred meters is no longer the limit.

When Berk-Tek introduced OneReach, it was a game-changer—simply, reliably and cost-effectively taking power and data to new distances. Today, with Gigabit Ethernet capability, OneReach extends the possibilities and options for provisioning remotely located security cameras, access control devices or wireless access points. Simply. Reliably. And cost-effectively.

### TAKE POWER & GIGABIT DATA TO NEW DISTANCES

You can rely on OneReach to transmit both power and gigabit data to distances previously unreachable with conventional PoE/PoE+ solutions. Plus OneReach not only allows for a lower cost installation, but also delivers the benefits of infrastructure simplification and remote management capabilities.

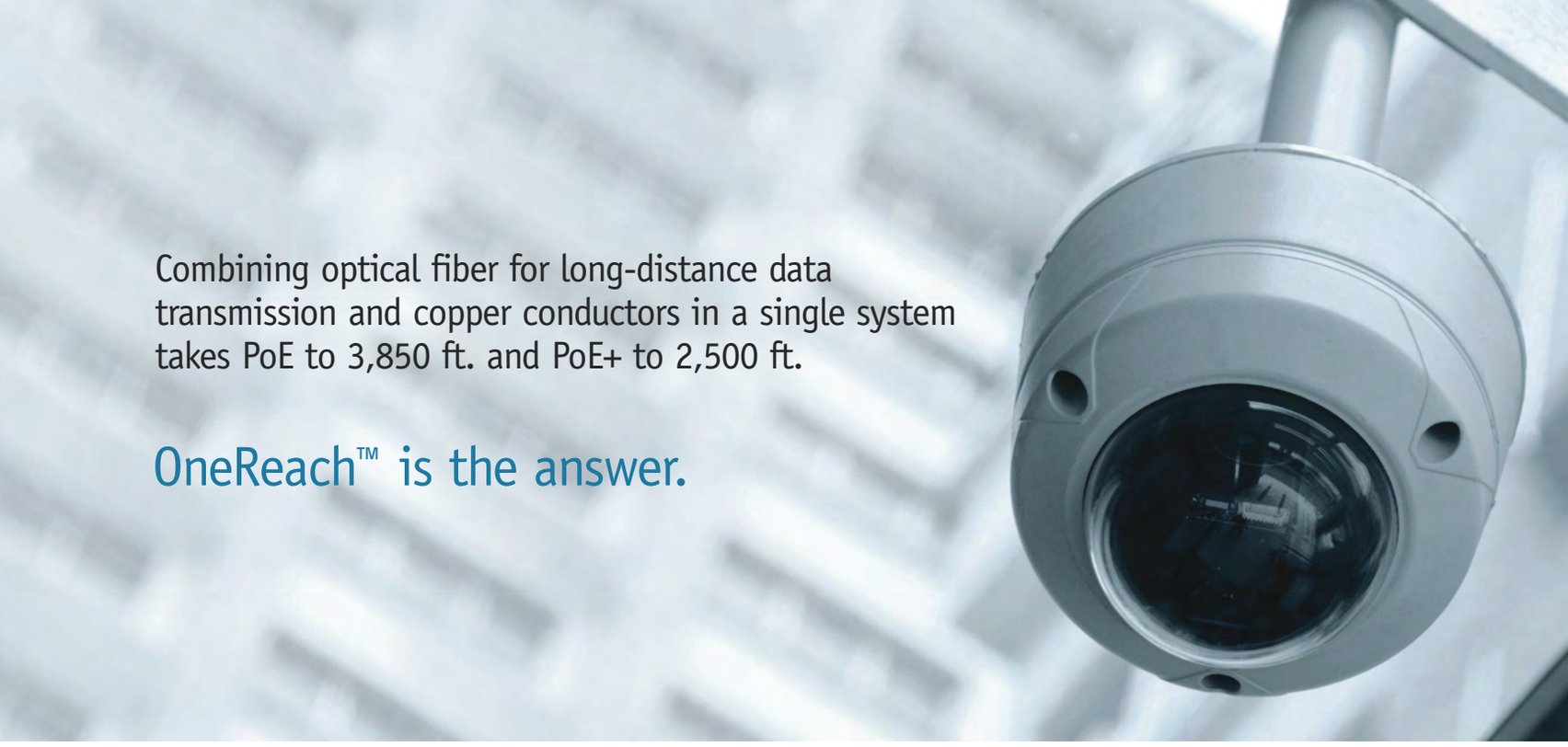
### STANDARD COMPONENTS, CUSTOM RESULTS

The OneReach System is an integrated power and data cable system with three distinct segments; Power Injection (PI), OneReach Cable Assembly (OCA), and Remote PoE Port (RPP). The components of each segment have been designed to work together seamlessly to ensure simple installation and ease of use. And selecting the right OCA can extend PoE or PoE+ up to several thousand feet from the IT closet that supplies power and houses UPS devices.

Designed to support single or multiple remote devices, the variety of available components allows you to build the exact system you need to meet your specific installation needs. Factory-terminated and tested assemblies that combine multiple stranded copper conductors and optical fibers arrive ready to install and flawlessly interface with a variety of media modules for both the closet and remote locations. OneReach is the answer.

*PoE and PoE+ deliver the benefits of simplified networks, centralized power management and back-up, and faster and less costly installations. Now with Gigabit Ethernet capability.*

► *Now available with High PoE for up to 50 watts of remote power.*



Combining optical fiber for long-distance data transmission and copper conductors in a single system takes PoE to 3,850 ft. and PoE+ to 2,500 ft.

# OneReach™ is the answer.

## ONEREACH AT A GLANCE

With integrated power and data, OneReach extends PoE and PoE+ far beyond traditional limitations. OneReach enables you to easily realize all the benefits of simplification and cost-effectiveness of PoE and PoE+ in installation environments that exceed the standard distance limitations of Ethernet. Plus, with Gigabit Ethernet capability, OneReach extends the options for supporting remotely located data intensive applications such as wireless access points.

### BENEFITS

- Enables PoE/PoE+ equipment to be located more than 100 meters from the switch
- Simplifies network and device management through centralized IT infrastructure
- Extends remote application options and performance with Gigabit Ethernet capability
- Cost savings versus installation of a new electrical outlet
- CL3P-OF and CL3R-OF/PLTC-OF listing allows cable to be installed in plenum or riser communication pathways
- Ease of installation with optional pre-terminated and factory tested products arriving ready to install
- Broad design selection allows for mix and match of copper and fiber components to specific networking applications
- Designs for plenum or riser indoor, outdoor and indoor/outdoor installations
- Armor option adds crush resistance and protection from rodent attacks
- Pigtails enable field termination when final run lengths are not known

### FEATURES

- Supports Gigabit Ethernet
- Combines control and communication in industrial pathways
- Provides common pathway for fiber backbone and Class 3 power supply
- Ideal for IP cameras, wireless access points and other ESS devices
- CL3P-OF, dry rated
- CL3R-OF, wet and dry rated
- OM3 optical fiber standard. Other fiber types available on request
- Supports indoor, outdoor and indoor/outdoor environments
- Uses standard LC connectors
- Configurations with stranded THWN and/or TFFN copper conductors
- Armored cable configurations available

### APPLICATIONS & STANDARDS

OneReach provides power and data connections for remote devices such as security cameras, access control devices and wireless access points with options to support single and multi-port applications:

- IEEE 802.3af
- IEEE 802.3at
- EN 50173
- ISO/IEC 11801
- UL 13
- ANSI/ICEA S-104-696
- IEC 1000-4-5
- IEEE 802.3 10/100BASE-T
- IEEE 802.3 10/100/1000BASE-T

RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# ONEREACH™ ENABLES NEW OPTIONS, NEW APPLICATIONS AND MORE POSSIBILITIES.

Security Phones, WAPs, Security Cameras–any PoE/PoE+ application:
**One Choice. OneReach.**


*"This system was a life saver for this particular application and environment, and we are looking at future potential applications for upcoming projects."*

*—Rob Kwiatkowski*
*Hudson Valley Community College*

## BLUE-LIGHT SECURITY PHONES

Blue-light telephone networks play an important role on many college campuses across North America for safety, security and convenience reasons. Some of these phone locations also include VoIP security phones and IP security cameras.

The OneReach PoE Extender System can provide both the power and data required for IP devices at distances up to 3,800 ft./ 1,100 m. from the equipment room. That's critical because a more traditional PoE approach would require mid-span equipment to be located within 100 m. (330 ft.) of the phones and cameras and could also require a new electrical power cable run and electrical outlet to be installed. If these critical campus emergency system components are run with local power, redundancy needs to be considered as well, so that a power outage does not bring down the emergency call system or security cameras. OneReach solves that issue.

## WIRELESS ACCESS POINTS

In today's always connected environment, providing wireless access is no longer a luxury, it is a necessity for any and every public space, like college and corporate campuses, hotels, entertainment venues, airports, hospitals, convention centers, distribution centers and big-box retailers. With Gigabit Ethernet bandwidth and effective distances of up to 3,800 ft. from the headend, OneReach enables cost-effective, reliable WAPs to facilitate remote access for laptops, smartphones and tablets so that users can employ their devices to access information quickly, without interference.

For some spaces, such as large, open plan meeting spaces, dining areas or auditoriums, the best coverage from a WAP may come from locating the device centrally, for example in the ceiling. But while this device location may provide optimal coverage, supplying power and data connectivity to such a location has usually been difficult and costly. For these installation challenges, OneReach provides the ideal solution. By combining power and data cable within a single jacket, backed up by a centrally-located UPS and connecting to a single compact device, OneReach enables installations in the trickiest of environments.

## PARKING GARAGE SECURITY CAMERAS

As the cost of security cameras has fallen and the quality of the footage captured has increased, the public has grown to expect video surveillance in more and more public spaces. Simultaneously, businesses and insurers have embraced the technology to ensure the safety of employees, customers and property.

Locations where the overall number of people or security staff may be minimal, increase the need for effective remote surveillance capabilities. But many have proven more difficult or costly to ensure the complete surveillance coverage of, for example, parking garages and remote parking lots.

OneReach™ is the perfect choice for this type of installation, taking power and data up to 3,850 ft. from the central telecommunications closet, powering the camera via PoE, and ensuring the safety of people and property.

## ANY APPLICATION. ONE CHOICE. ONEREACH.

Key to the benefits of OneReach is its transparent nature. As long as the Powered Device is compliant to the PoE specification, it can be supported by OneReach. And as newer, high-performance applications that take advantage of PoE, PoE+, and PoE++ are deployed, OneReach supports those applications, at longer distances, with:

- No need to locate a power outlet in difficult areas
- Consolidated power source and centralized power back-up
- Ability for low voltage contractors to install the entire system

OneReach simply needs one length of composite fiber/copper cable to be run to each remote powered device and includes everything needed for data transmission and device power. Plus, with all power coming from the equipment room, having UPS back-up for power redundancy is easy and requires only one centrally located UPS to protect all remote sites.

OneReach provides extended distance connectivity to any IEEE 802.3af and 802.3at device. The cabling is standards compliant and delivers significant cost savings through simplified installation, the elimination of separate electrical power cabling and the consolidation of back-up power supplies.

Even configuring the system is easy. To determine a bill of materials for your project, **visit OneReachSystem.com.**

## ONEREACH COST ADVANTAGE

OneReach delivers significant cost advantages over traditional solutions. In a typical system of 24 device deployment with PoE+ and an average distance of 550 ft. OneReach is the lowest cost and the easiest to maintain.

| PRODUCT | TOTAL COST | $/PORT | CONSOLIDATED POWER | COMMENTS |
|---|---|---|---|---|
| **OneReach** | $48,000 | $2,000 | Y | Lowest cost and easiest to maintain |
| **Hardened Switch** | $48,000 | $2,000 | N | Distributed UPS must be on a maintenance calendar; IT equipment distributed in outside plant |
| **Hardened Media Conversion** | $67,200 | $2,800 | N | Distributed UPS must be on a maintenance calendar |

*Note: costs shown do not include the costs of a 24-port switch, closet UPS, patch cords and devices.*


# ONEREACH™:
## One Pathway. One Pull. One Solution.

OneReach enables you to take power easily from the closet, over the OCA to the Remote PoE Port specially suited for your application.

### FROM THE CLOSET...

The OneReach System begins in the local closet with the PI. The PI provides both the power to run the system and the technology to transmit the data signals to previously unreachable distances.

This approach to IP-based security enables the consolidation of device management through the existing network infrastructure. By locating the power for remote devices in a single local closet, users are able to consolidate UPS devices and streamline and simplify management. Unlike traditional installations, with OneReach there is no need to provide for redundant power at a variety of remote and possibly environmentally hostile locations.

### SPANNING THE DISTANCE...

Speed, simplicity and performance. You find them all in the OCA of the OneReach System. Power and data transmission are supported within a single jacket through the use of Berk-Tek CL3P-OF or CL3R-OF rated composite copper/fiber cable.

*▸ You can rely on OneReach to transmit both power and gigabit data to distances previously unreachable with conventional PoE/PoE+ solutions.*

| APPLICATION LOCATION | PART NUMBER | DESCRIPTION | OPERATING TEMPERATURE RANGE |
|---|---|---|---|
| Closet | 81000380 | 1-port Media Module, Tri-speed, PoE+ | 0°C to +50°C |
| | 81000463 | 1U Mounting Bracket | |
| Cable | 11062454 | OneReach Cable (ft.) part number: HDRC002EB3010/25-002X12AWG | -40°C to +75°C |
| | 81000302 | M8 Pigtail 2 x 18AWG – 6 IN | |
| Remote End | 81000381 | 1-port Remote, Tri-speed, PoE+ | -40°C to +50°C |

## ONEREACH™ BENEFITS

- Simplifies device management and enables UPS consolidation
- Uses simple screw terminal connections
- Supports PoE and PoE+
- Simple, single pull installation
- Combines control and communication in industrial pathways
- Designs for plenum and riser indoor, outdoor and indoor/outdoor environments
- Able to support distances beyond 2,500 feet
- Pigtail available for use in 1-port applications
- No need to install remote power outlets, remote industrial switches or remote UPS
- Easily attach pre-terminated LC or MPO connectors for data transmission
- Standard M8 connector screws into place to complete power circuit
- Uses standard RJ45 connectivity to patch to any IP-based device
- Allows common pathway for fiber backbone and Class 3 power supply


Rapid and reliable installation is the norm with OneReach, which lets you take PoE and PoE+ to new distances. The stranded conductors provide enough power to support PoE to distances well beyond the 100 meters supported through traditional twisted pair cabling. Combine this with the highest quality OM3 optical fiber, and you get an unparalleled solution for flawless data transmission.

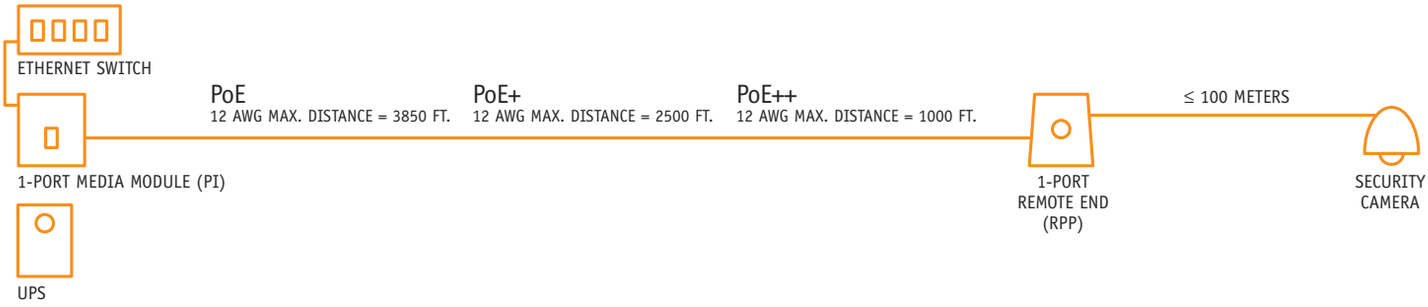
## TO YOUR DEVICE.

Whether you need to enable gigabit access for a single wireless access point for a common study area on campus or to support multiple cameras securing a remote parking area, the OneReach System gives you the power to get the job done.

OneReach enables you to take power easily from the closet, over the OCA to the Remote PoE Port specially suited for your application. And no matter which RPP you select, to support one or multiple-devices, completing the OneReach System installation is a snap.

*One wireless access point installed in the ceiling:*

| PI | | OCA (Select one based upon RPP distance from closet) | | RPP | |
|---|---|---|---|---|---|
| **Name** | **# required** | **Name** | **# required** | **Name** | **# required** |
| 1-Port Media Module | 1 | 1-Port 12 AWG OCA | 1 | 1-Port Remote, Converter | 1 |




RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# PREMISES DISTRIBUTION

TIGHT BUFFER
FIBER OPTIC CABLE

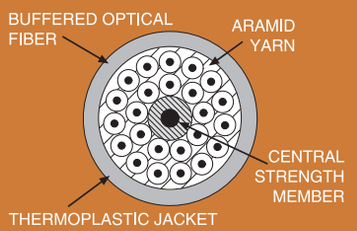

## TEMPERATURE RATING

| | PDR | PDP |
|---|---|---|
| OPERATION | -40°C to +75°C | -20°C to +75°C |
| STORAGE | -40°C to +85°C | -40°C to +85°C |
| INSTALLATION | -20°C to +75°C | 0°C to +75°C |

**Sample Part Number: PDP024EB3010/25**

## AT A GLANCE

- Direct termination
- Up to 144 fibers
- Plenum or riser rated
- Reduced diameter constructions




Berk-Tek®
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Berk-Tek's **PREMISES DISTRIBUTION** TIGHT BUFFER FIBER OPTIC CABLE is designed for installation in riser and plenum environments and horizontal and interbuilding backbone structures. Berk-Tek's tight buffered cable is designed for direct connectorization of the standard multimode, single-mode or GIGAlite™ fibers.

## FEATURES

- Flexible, small-diameter, 900 µm tight-buffered construction
- High tensile strength and small-diameter design
- Six to 144-count fiber construction designs ideal for horizontal and backbone installation
- Single-mode, multimode and hybrid designs available
- Supports 40/100 Gigabit Ethernet, 10 Gigabit Ethernet, 10BASE-F, Fast Ethernet, FOIRL, Fibre Channel FC-PH, ATM, Gigabit Ethernet, FDDI, Sonet, voice, video and other networking applications
- Also available in low-smoke zero-halogen design

## BENEFITS

- Cost-saving design, easy to install and terminate
- Provides for greater pulling distances, reducing installation time
- Broad design selection allows for mix and match of fiber components to specific networking applications

## CONSTRUCTION

900 µm tight-buffered fibers surrounded by aramid yarns. Sheathed using a special, state-of-the-art polymer material. All-dielectric.

## FLAME RATING

OFNR/FT-4
OFNP/FT-6

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| North American | Telcordia GR-409 |
| | ANSI/ICEA S-83-596 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| IEEE 802.3 | 10GBASE-X | 10 Gb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1 Gb/s |
| IEEE 802.3 | 10BASE-F | 10 Mb/s |
| IEEE 802.3 | FOIRL | 10 Mb/s |
| FDDI | | 100 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| | | 1.2/2.4 Gb/s |
| Fibre Channel | FC-PH | 1.062 Gb/s |

## SPECIAL OPTIONS

Fiber in a box packaging optional for 6 and 12 fiber constructions.

**RISER RATED TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 6 | **PDR006** | 0.224 | 5.7 | 19 | 29 | 3.4 | 8.5 | 2.2 | 5.7 | 150 | 667 | 45 | 200 |
| 12 | **PDR012** | 0.246 | 6.2 | 25 | 37 | 3.7 | 9.4 | 2.5 | 6.2 | 150 | 667 | 45 | 200 |
| 24 | **PDR024** | 0.335 | 8.5 | 47 | 70 | 5.0 | 12.8 | 3.4 | 8.5 | 150 | 667 | 45 | 200 |
| 48 | **PDR12B048** | 0.590 | 15.0 | 131 | 196 | 8.9 | 22.5 | 5.9 | 15.0 | 600 | 2670 | 180 | 800 |
| 72 | **PDR12B072** | 0.732 | 18.6 | 203 | 301 | 11.0 | 27.9 | 7.3 | 18.6 | 600 | 2670 | 180 | 800 |
| 96 | **PDR12B096** | 0.880 | 22.4 | 291 | 433 | 13.2 | 33.5 | 8.8 | 22.4 | 600 | 2670 | 180 | 800 |
| 144 | **PDR12B144** | 0.940 | 23.9 | 310 | 461 | 14.1 | 35.8 | 9.4 | 23.9 | 1000 | 4445 | 300 | 1335 |

**PLENUM RATED TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 6 | **PDP006** | 0.180 | 4.6 | 12 | 18 | 2.7 | 6.9 | 1.8 | 4.6 | 100 | 445 | 30 | 133 |
| 12 | **PDP012** | 0.210 | 5.3 | 18 | 26 | 3.2 | 8.0 | 2.1 | 5.3 | 100 | 445 | 30 | 133 |
| 24 | **PDP024** | 0.305 | 7.7 | 41 | 61 | 4.6 | 11.6 | 3.1 | 7.7 | 150 | 667 | 45 | 200 |
| 48 | **PDP12B048** | 0.565 | 14.4 | 136 | 202 | 8.5 | 21.5 | 5.7 | 14.4 | 600 | 2670 | 180 | 800 |
| 72 | **PDP12B072** | 0.677 | 17.2 | 212 | 316 | 10.2 | 25.8 | 6.8 | 17.2 | 600 | 2670 | 180 | 800 |
| 96 | **PDP12B096** | 0.865 | 22.0 | 313 | 466 | 13.0 | 33.0 | 8.7 | 22.0 | 600 | 2670 | 180 | 800 |
| 144 | **PDP12B144** | 0.920 | 23.4 | 318 | 474 | 13.8 | 35.1 | 9.2 | 23.4 | 1000 | 4445 | 300 | 1335 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Tight Buffer | **AB0707** | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59.



RoHS COMPLIANT

Berk-Tek's **PREMISES DISTRIBUTION INDOOR/OUTDOOR** TIGHT BUFFER FIBER OPTIC CABLE is designed for LAN/WAN campus and building backbone infrastructure. Special jacketing materials used on plenum rated designs enable use in harsh environments such as power plants, mining, airports and petrochemical installations.

## FEATURES

- Plenum rating enables installations to go directly from outside plant into building with no transition point requirement
- High tensile strength, crush-resistant and small-diameter design
- Ready for direct termination, no fan-out kits are needed
- All-dielectric design
- Available with Armor-Tek™ Interlocking Armor
- Water-blocked core or subunits using Dry-Gel system
- Available with new bend-insensitive, single-mode fibers

## BENEFITS

- Can incorporate an optional tracer wire
- Designed for outside plant installation (non-aerial lashed)
- Greater pulling distances possible due to high tensile strength
- Low cable plant maintenance and ease of installation
- Flexible, reduced cable diameter with easy access to tight buffer fibers

## CONSTRUCTION

900 µm tight-buffered fibers surrounded by aramid yarns.

## OUTDOOR CONSIDERATIONS

Tight buffer fiber cables are not suitable for aerial-lashed installations.

## FLAME RATING

OFNR/FT-4
OFNP/FT-6

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| North American | Telcordia GR-409 |
| | ICEA S-83-596 |
| | ANSI/ICEA S-104-696 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| | 10GBASE-SR/SW | 10 Gb/s |
| | 10GBASE-LX4 | 10 Gb/s |
| IEEE 802.3 | 100BASE-SX/FX | 1 Gb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1 Gb/s |
| IEEE 802.3 | 10BASE-F | 10 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| Fibre Channel | FC-PH | 1.062 Gb/s |
| | | 2.125 Gb/s |

**TECHNICAL DATA — RISER (OFNR) RATED WITH A PVC SHEATH**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 6 | **PDR006-I/O(BLA)** | 0.224 | 5.7 | 19 | 29 | 3.4 | 8.5 | 2.2 | 5.7 | 150 | 667 | 45 | 200 |
| 12 | **PDR012-I/O(BLA)** | 0.246 | 6.2 | 25 | 37 | 3.7 | 9.4 | 2.5 | 6.2 | 150 | 667 | 45 | 200 |
| 24 | **PDR024-I/O(BLA)** | 0.335 | 8.5 | 47 | 70 | 5.0 | 12.8 | 3.4 | 8.5 | 150 | 667 | 45 | 200 |
| 48 | **PDR12B048-I/O(BLA)** | 0.590 | 15.0 | 131 | 196 | 8.9 | 22.5 | 5.9 | 15.0 | 600 | 2670 | 180 | 800 |
| 72 | **PDR12B072-I/O(BLA)** | 0.732 | 18.6 | 203 | 301 | 11.0 | 27.9 | 7.3 | 18.6 | 600 | 2670 | 180 | 800 |
| 96 | **PDR12B096-I/O(BLA)** | 0.880 | 22.4 | 291 | 433 | 13.2 | 33.5 | 8.8 | 22.4 | 600 | 2670 | 180 | 800 |
| 144 | **PDR12B144-I/O(BLA)** | 0.940 | 23.9 | 310 | 461 | 14.1 | 35.8 | 9.4 | 23.9 | 1000 | 4445 | 300 | 1335 |

**TECHNICAL DATA — PLENUM (OFNP) RATED WITH A FLUOROPOLYMER SHEATH**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 6 | **PDP006-HE(BLA)** | 0.208 | 5.3 | 18 | 26 | 3.1 | 7.9 | 2.1 | 5.3 | 300 | 1335 | 90 | 400 |
| 12 | **PDP012-HE(BLA)** | 0.255 | 6.5 | 30 | 44 | 3.8 | 9.7 | 2.6 | 6.5 | 300 | 1335 | 90 | 400 |
| 24 | **PDP024-HE(BLA)** | 0.287 | 7.3 | 36 | 53 | 4.3 | 10.9 | 2.9 | 7.3 | 300 | 1335 | 90 | 400 |
| 48 | **PDP12B048-HE(BLA)** | 0.565 | 14.4 | 136 | 202 | 8.5 | 21.5 | 5.7 | 14.4 | 600 | 2640 | 180 | 800 |
| 72 | **PDP12B072-HE(BLA)** | 0.677 | 17.2 | 212 | 316 | 10.2 | 25.8 | 6.8 | 17.2 | 600 | 2640 | 180 | 800 |
| 96 | **PDP12B096-HE(BLA)** | 0.865 | 22.0 | 313 | 466 | 13.0 | 33.0 | 8.7 | 22.0 | 800 | 3559 | 240 | 1068 |
| 144 | **PDP12B144-HE(BLA)** | 0.920 | 23.4 | 318 | 474 | 13.8 | 35.1 | 9.2 | 23.4 | 1000 | 4445 | 300 | 1335 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Tight Buffer | **AB0707** | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite™ | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59.

# PREMISES DISTRIBUTION INDOOR/OUTDOOR

TIGHT BUFFER
FIBER OPTIC CABLE

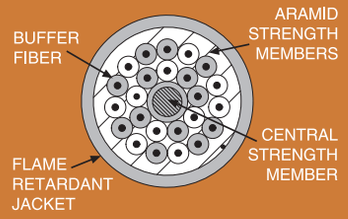

## TEMPERATURE RATING

| | PDR-I/O(BLA) | PDP-HE(BLA) |
|---|---|---|
| OPERATION | -40°C to +75°C | -20°C to +75°C |
| STORAGE | -40°C to +85°C | -40°C to +85°C |
| INSTALLATION | -20°C to +75°C | -20°C to +75°C |

**Sample Part Number: PDP024CB3510/25-HE(BLA)**

## AT A GLANCE

- Indoor/Outdoor
- 900 µm tight buffer
- Water blocked
- Sunlight resistant




RoHS COMPLIANT



Berk-Tek®
A NEXANS COMPANY

# INTERCONNECT
TIGHT BUFFER
FIBER OPTIC CABLE

Berk-Tek's **INTERCONNECT** TIGHT BUFFER FIBER OPTIC CABLE is designed for installation in riser and plenum horizontal structured cabling applications. Berk-Tek's Interconnect tight-buffered cable is available with standard multimode, single-mode and GIGAlite™ fibers.


## FEATURES

- Flexible, small-diameter, 900 µm tight-buffered construction
- High tensile strength and small cable diameter design
- 1 through 4 fiber design for patch cable and horizontal installations
- Supports 10BASE-F, Fast Ethernet, FOIRL, Fibre Channel FC-PH, ATM, Gigabit Ethernet, FDDI, Sonet, voice, video and other networking applications
- Also available in low-smoke zero-halogen design
- MCx Series designs compatible with small form factor (SFF) connectors

## BENEFITS

- Cost-saving design is easy to install and terminate
- Assurance that cables will meet required specifications for communication networking applications
- Space-saving design allows for dense cable installations

## CONSTRUCTION

900 µm buffered fibers surrounded by aramid yarns. Sheathed using a special, state-of-the-art, polymer material. All-dielectric.

## FLAME RATING

OFNR/FT-4
OFNP/FT-6

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| North American | Telcordia GR-409<br>ICEA S-83-596 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| | 10GBASE-SR/SW | 10 Gb/s |
| | 10GBASE-LX4 | 10 Gb/s |
| IEEE 802.3 | 10GBASE-X | 10 Gb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1 Gb/s |
| IEEE 802.3 | 10BASE-F | 10 Mb/s |
| IEEE 802.3 | FOIRL | 10 Mb/s |
| FDDI | | 100 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| | | 1.2/2.4 Gb/s |
| Fibre Channel | FC-PH | 1.062 Gb/s |

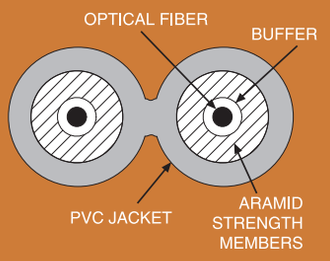
## TEMPERATURE RATING

| | |
|---|---|
| OPERATION | -20°C to +75°C |
| STORAGE | -40°C to +85°C |
| INSTALLATION | 0°C to +70°C |

**Sample Part Number: ICP0X0LB3010/75**

## AT A GLANCE

- Riser
- Plenum
- Low-smoke zero-halogen (LSZH)
- 900 µm or 600 µm tight buffer




**RISER RATED TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 1 | **MCR001** | 0.063 | 1.6 | 2 | 3 | 1.0 | 2.5 | 0.6 | 1.6 | 50 | 220 | 15 | 66 |
| 2 Duplex | **MCR0X0** | .063 x .130 | 1.6 x 3.3 | 4 | 6 | 1.0 | 2.5 | 0.6 | 1.6 | 50 | 220 | 15 | 66 |
| 1 | **ICR001–(D4)** | 0.079 | 2.0 | 6 | 9 | 1.2 | 3.0 | 0.8 | 2.0 | 50 | 220 | 15 | 66 |
| 2 Duplex | **ICR0X0–(D4)** | .079 x .162 | 2.0 x 4.1 | 5 | 8 | 1.2 | 3.0 | 0.8 | 2.0 | 50 | 220 | 15 | 66 |
| 1 | **ICR001** | 0.114 | 2.9 | 6 | 9 | 1.7 | 4.3 | 1.1 | 2.9 | 50 | 220 | 15 | 66 |
| 2 Duplex | **ICR0X0** | .114 x .232 | 2.9 x 5.9 | 12 | 18 | 1.7 | 4.3 | 1.1 | 2.9 | 50 | 220 | 15 | 66 |
| 2 Round | **ICR002** | 0.187 | 4.7 | 12 | 18 | 2.8 | 7.1 | 1.9 | 4.7 | 100 | 445 | 30 | 133 |
| 4 | **ICR004** | 0.187 | 4.7 | 13 | 19 | 2.8 | 7.1 | 1.9 | 4.7 | 100 | 445 | 30 | 133 |

**PLENUM RATED TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 1 | **MCP001** | 0.063 | 1.6 | 2.0 | 3.0 | 0.9 | 2.4 | 0.6 | 1.6 | 25 | 111 | 8 | 33 |
| 2 Duplex | **MCP0X0** | .063 x .130 | 1.6 x 3.3 | 4.0 | 6.0 | 2.0 | 5.0 | 1.3 | 3.3 | 50 | 220 | 15 | 66 |
| 1 | **ICP001** | 0.116 | 2.9 | 6 | 8 | 1.7 | 4.4 | 1.2 | 2.9 | 50 | 220 | 15 | 66 |
| 2 Duplex | **ICP0X0** | .114 x .232 | 2.9 x 5.9 | 11 | 16 | 3.5 | 8.8 | 2.3 | 5.9 | 50 | 220 | 15 | 66 |
| 2 Round | **ICP002** | 0.170 | 4.3 | 12 | 18 | 2.6 | 6.5 | 1.7 | 4.3 | 100 | 445 | 30 | 133 |
| 4 | **ICP004** | 0.170 | 4.3 | 13 | 20 | 2.6 | 6.5 | 1.7 | 4.3 | 100 | 445 | 30 | 133 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Tight Buffer | **AB0707** | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59.

Berk-Tek®
A NEXANS COMPANY



RoHS COMPLIANT

# ADVENTUM® TIGHT BUFFER
FIBER OPTIC CABLE

Berk-Tek's **ADVENTUM TIGHT BUFFER** FIBER OPTIC CABLE is designed specifically for FTTH, MDU and MTU deployments. This unique cable design is also ideal for security camera applications.

## FEATURES

- Plenum and riser ratings enable installations to go directly from outside plant into building with no transition point requirement
- High tensile strength, crush-resistant and small-diameter design
- Tight-buffered fibers are ready for direct termination, no fan-out kits are needed
- All-dielectric design
- Available with Interlocking Armor
- Fully water-blocked core using a dry water-blocking system
- Available with new bend-insensitive single-mode fibers

## BENEFITS

- Can incorporate an optional tracer wire
- Designed for outside plant installation (non-aerial lashed)
- Greater pulling distances possible due to high tensile strength
- Long-term reliability improved over traditional tight buffer premises cables
- Low cable-plant maintenance, ease-of-installation
- Reduced cable diameter, flexible, with easy access to buffer tube and fibers

## CONSTRUCTION

Each DryGel water-blocked buffer tube contains 1 or 2, 900 µm tight-buffered fibers.

- 3 mm buffer tube diameter
- Thermoplastic jacket material

## OUTDOOR CONSIDERATIONS

Loose tube cables are recommended if interbuilding conduit systems lie above the frost line and likely to fill with water. Adventum Tight Buffer cables are not suitable for aerial-lashed installations.

## FLAME RATING

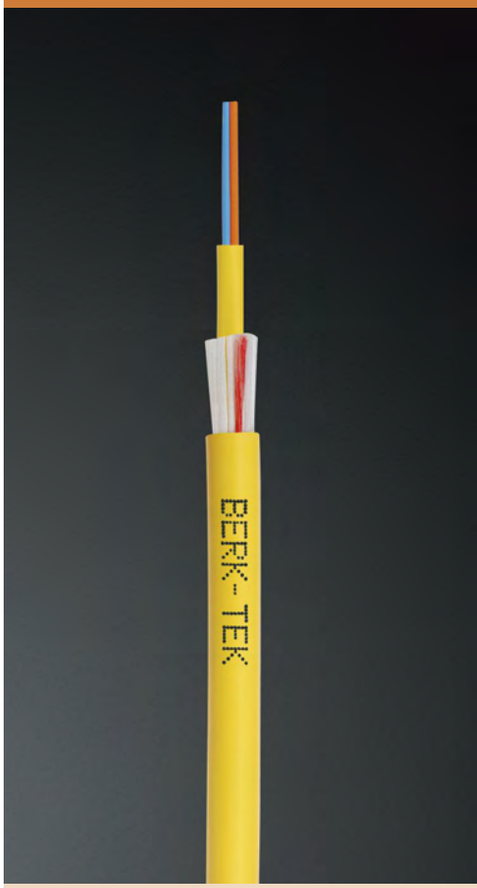
OFNR/FT-4
OFNP/FT-6

## STANDARDS

| | |
|---|---|
| North American | Telcordia GR-409 |
| | ANSI/ICEA S-87-640 |
| | ANSI/ICEA S-83-596 |
| | ANSI/ICEA S-104-696 |
| European | EN 50173I |
| International | SO/IEC 11801 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| | 10GBASE-SR/SW | 10 Gb/s |
| | 10GBASE-LX4 | 10 Gb/s |
| IEEE 802.3 | 100BASE-SX/FX | 10 Gb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1 Gb/s |
| IEEE 802.3 | 10BASE-FL | 10 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| | | 1.2/2.4 Gb/s |
| Fibre Channel | FC-PH | 1.062 Gb/s |
| | | 2.125 Gb/s |




**TEMPERATURE RATING**

| | |
|---|---|
| OPERATION | -20°C to +75°C |
| STORAGE | -40°C to +85°C |
| INSTALLATION | -0°C to +70°C |

**Sample Part Number: ATP002AB0707**

**TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 1-2 | ATR002 | 0.235 | 6.0 | 22 | 33 | 3.5 | 9.0 | 2.4 | 6.0 | 300 | 1335 | 90 | 400 |
| 1-2 | ATP00x | 0.235 | 6.0 | 26.0 | 38.0 | 3.5 | 9.0 | 2.4 | 6.0 | 300 | 1335 | 90 | 400 |

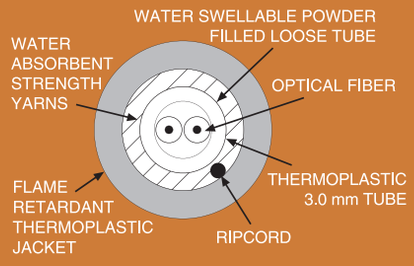
**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Tight Buffer | AB0707 | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | CB3510/25 | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite™ | LB3010/75 | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | EB3010/25 | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | XB3010/X5 | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59.

## AT A GLANCE

- Indoor/Outdoor
- Tight buffer
- Security to FTTx




RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# 12-FIBER RIBBON CABLE

FIBER OPTIC CABLE

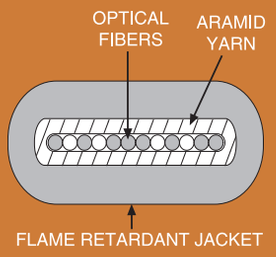

## TEMPERATURE RATING

| | |
|---|---|
| OPERATION | -20°C to +75°C |
| STORAGE | -40°C to +85°C |
| INSTALLATION | 0°C to +60°C |

**Sample Part Number: RDP012EB3010/25**

## AT A GLANCE

- Data center and SANs
- 12-Fiber Ribbon
- Plenum rated or LSZH
- Small size allows for high-density packing in racks




Berk-Tek® A NEXANS COMPANY

Berk-Tek's **12-FIBER RIBBON CABLE** is a plenum-rated, 12-fiber, single-mode or multimode optical fiber ribbon with a protective aramid strength member layer and outer jacket. Ideally suited for use in a variety of closet and OEM situations, this cable features a low-friction, highly-flexible jacket material facilitating easy routing in tight, high-density termination environments.

## FEATURES

- Step-index, single-mode or graded-index multimode optical fiber
- Protective UV-cured acrylate coating
- Every fiber is subjected to a 0.7 Gpa (100 kpsi) minimum proof stress per EIA/TIA FOTP-31
- Peelable UV-curable matrix material
- Aramid strength members
- Qualified to ICEA S-83-596 and Telcordia GR-409

## BENEFITS

- Easily interfaced to MT- and MTP-based connectors, as well as today's newest ribbon connectors
- Cable jacket design promotes ease of entry for all terminations
- Small size equals high-density packing in equipment racks and/or telecommunications closets
- Plenum rating covers most flame rating specifications
- Cable design offers excellent mechanical performance with superior crush and flex ratings
- Low-friction, highly-flexible jacket material facilitates easy routing in tight, high-density terminations

## CONSTRUCTION

The ribbon is comprised of 12 optical fibers coated with a dual acrylate coating system. The fibers are contained in a peelable UV curable matrix material, and the ribbon structure is designed to allow easy separation of the fibers from the matrix in preparation for splicing or termination to an MTP connector. Aramid strength members are applied between the ribbon and the extruded cable jacket to provide tensile strength and crush resistance. The outer jacket material is plenum-grade thermoplastic or low-smoke zero-halogen (LSZH).

## FLAME RATING

OFNP/FT-6 (RDP)
LSZH option available

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| North American | Telcordia GR-409<br>ANSI/ICEA S-83-596 |

## APPLICATIONS

Berk-Tek optical fiber ribbon cables are ideal for use in data centers and SAN applications where high-density connectivity is required. Berk-Tek optical fiber ribbon cables are intended for a wide variety of high-speed data applications, including:

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| IEEE 802.3 | 10BASE-X | 10 Gb/s |
| IEEE 802.3 | 10BASE-SX/LX | 1 Gb/s |
| IEEE 802.3 | 10BASE-F | 10 Mb/s |
| IEEE 802.3 | FOIRL | 10 Mb/s |
| FDDI | | 100 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| | | 1.2-2.4 Gb/s |
| Fibre Channel | FC-PH | 1.062 Gb/s |

**TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIMENSIONS | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 12 | **RDP012** | 0.100 x 0.200 | 2.5 x 5.1 | 8 | 12 | 3.0 | 7.6 | 2.0 | 5.1 | 180 | 800 | 54 | 240 |
| 12 | **RDZ012** | 0.100 x 0.200 | 2.5 x 5.1 | 7 | 10 | 3.0 | 7.6 | 2.0 | 5.1 | 180 | 800 | 54 | 240 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Ribbon | **AB0707** | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite™ | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59.

RoHS COMPLIANT

# TACTICAL FIBER

TIGHT BUFFER
FIBER OPTIC CABLE

Berk-Tek's **TACTICAL FIBER** TIGHT BUFFER fiber optic cables go places other cables can't. With a rugged, crush-resistant, durable jacket and superior flexibility in cold temperatures, Tactical Fiber cables are able to withstand the harshest conditions—allowing for field deployable applications such as law enforcement and industrial environments as well as news and sports video coverage. Tactical Fiber cables are vigorously tested to withstand extreme temperatures, chemicals, impact and stressed flexibility. As a result, Tactical Fiber cables allow you to go in to the most unforgiving environments with safety and reliability.

## FEATURES

- Wide operating temperature range
- Rugged, durable jacket
- Superior mechanical properties
- Superior flexibility in cold temperatures
- Available with optional radiation-hardened optical fibers
- Tight-buffered design allows direct connector termination
- Breakout or distribution style construction
- Available with a LSZH jacket

## BENEFITS

- Flexibility allows for simple field deployment and redeployment
- Field repairs are supported due to tight-buffered fibers
- Rugged polyurethane sheath designed for harsh environments
- Compact size and lightweight design

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| North American | Telcordia GR-409<br>ICEA S-104-696 |

## APPLICATIONS

- Excellent for field deployable/retrievable applications such as news/sports coverage
- Petrochemical, heavy industrial, mining, and other harsh environments
- Law enforcement and tactical security applications
- Commercial security and sensor applications
- Fully water-blocked
- Available with copper conductors (12 - 24 AWG)

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| IEEE 802.3 | 10GBASE-X | 10 Gb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1000 Mb/s |
| IEEE 802.3 | 10BASE-F | 10 Mb/s |
| IEEE 802.3 | FOIRL | 10 Mb/s |
| FDDI | | 100 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| | | 1.2/2.4 Gb/s |
| Fibre Channel FC-PH | | 1.062 Gb/s |

**TESTED TO THE FOLLOWING TACTICAL CABLE REQUIREMENTS**

| | |
|---|---|
| Maximum Attenuation Rate | Cable Knot Test |
| Low/High Temp Bend | Cable Shrinkage |
| Impact Resistance | Durability of Identification Marking |
| Cold Impact Resistance | Temperature Range |
| Hot Impact Resistance | Temperature Cycling |
| Compressive Strength | Storage Temperature |
| Tensile Loading and Bending | Temperature/Humidity Cycling |
| Operating Tensile Loading and Bending | Thermal Shock |
| Cyclic Flexing | Freezing Water Immersion |

**TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIMENSIONS | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | short term | | long term | | short term | | long term | |
| | DISTRIBUTION | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 2 | TFC002 | 0.228 | 5.8 | 16 | 24 | 3.4 | 8.7 | 2.3 | 5.8 | 150 | 667 | 45 | 200 |
| 4 | TFC004 | 0.228 | 5.8 | 17 | 25 | 3.4 | 8.7 | 2.3 | 5.8 | 150 | 667 | 45 | 200 |
| | HEAVY DUTY BREAKOUT | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 4 | TFHD004 | 0.301 | 7.6 | 26 | 39 | 4.5 | 11.5 | 3.0 | 7.6 | 490 | 2200 | 120 | 550 |
| 6 | TFHD006 | 0.349 | 8.9 | 30 | 45 | 5.2 | 13.3 | 3.5 | 8.9 | 600 | 2670 | 150 | 667 |
| 12 | TFHD012 | 0.504 | 12.8 | 78 | 116 | 7.6 | 19.2 | 5.0 | 12.8 | 750 | 3336 | 190 | 845 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Tight Buffer | AB0707 | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | CB3510/25 | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite™ | LB3010/75 | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | EB3010/25 | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | XB3010/X5 | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59.

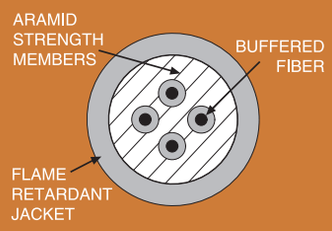

### TEMPERATURE RATING

| | |
|---|---|
| OPERATION | -46°C to +71°C |
| STORAGE | -55°C to +85°C |
| INSTALLATION | -46°C to +71°C |

**Sample Part Number: TFC004CB3510/25**

## AT A GLANCE

- Outdoor tactical cable
- Tight buffered 2-24 fiber
- Distribution or breakout design




RoHS COMPLIANT



Berk-Tek®
A NEXANS COMPANY

# HEAVY DUTY BREAKOUT CABLE

TIGHT BUFFER
FIBER OPTIC CABLE


Berk-Tek's **HEAVY DUTY BREAKOUT** cables are designed for installation in horizontal, industrial and other harsh environments where additional strength and fiber protection is required. Heavy Duty Breakout cables incorporate 900 µm tight buffered single-fiber aramid-filled subunits. The standard subunit diameter is 2.0 mm. Additional subunit diameters, including 1.6 mm and 2.5 mm are available.

## FEATURES

- Multimode, Single-mode, and GIGAlite™ fibers
- Available with new bend-insensitive single-mode fibers
- High tensile strength, crush resistant
- All-dielectric, aluminum or steel interlock armored designs available
- Water-blocked and harsh environment designs available
- Steel or aluminum interlock armored cables available
- LSZH riser version available

## BENEFITS

- High tensile strength provides for greater pulling distances
- Ease of installation
- Broad design selection allows for mix and match of fiber components to specific networking applications
- Low cable plant maintenance
- Armor option adds crush resistance and protection from rodent attacks

## CONSTRUCTION

Each cable utilizes individual subunits containing a single 900 µm tight buffered fiber, surrounded by aramid yarns. Cable design accommodates from 2 to 36 fibers (plenum) or 2 to 48 fibers (riser).

- Each fiber in an individual compact, numbered, aramid-filled subunit
- Tape wrapped dry core
- Colored high-strength ripcord

## FLAME RATING

OFNR/FT-4
OFNP/FT-6

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| National | Telcordia GR-409<br>ANSI/TIA-568-C.3 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| IEEE 802.3 | 10GBASE-X | 10 Gb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1 Gb/s |
| IEEE 802.3 | 10BASE-F | 10 Mb/s |
| IEEE 802.3 | FOIRL | 10 Mb/s |
| FDDI | | 100 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| | | 1.2/2.4 Gb/s |
| Fibre Channel FC-PH | | 1.062 Gb/s |

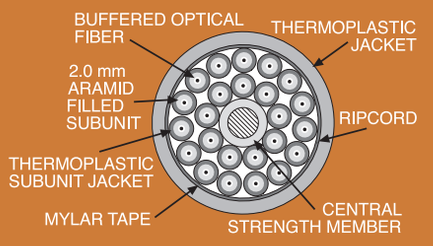
## TEMPERATURE RATING

| | |
|---|---|
| OPERATION | -20°C to +75°C |
| STORAGE | -40°C to +85°C |
| INSTALLATION | -20°C to +75°C |

**Sample Part Number: HDR012XB3010/25**

## AT A GLANCE

- 2-48 Fibers – Riser,
  2-36 Fibers – Plenum
- Rugged construction for harsh environments
- Tape wrapped dry core




**RISER RATED TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIMENSIONS | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 2 | **HDR002** | 0.276 | 7.0 | 32 | 48 | 4.1 | 10.5 | 2.8 | 7.0 | 150 | 660 | 45 | 198 |
| 4 | **HDR004** | 0.276 | 7.0 | 34 | 50 | 4.1 | 10.5 | 2.8 | 7.0 | 150 | 660 | 45 | 198 |
| 6 | **HDR006** | 0.325 | 8.3 | 48 | 72 | 4.9 | 12.4 | 3.3 | 8.3 | 150 | 660 | 45 | 198 |
| 12 | **HDR012** | 0.480 | 12.2 | 102 | 151 | 7.2 | 18.3 | 4.8 | 12.2 | 300 | 1320 | 90 | 396 |
| 24 | **HDR024** | 0.564 | 14.3 | 144 | 214 | 8.5 | 21.5 | 5.6 | 14.3 | 600 | 2640 | 180 | 792 |
| 36 | **HDR036** | 0.649 | 16.5 | 177 | 264 | 9.7 | 24.7 | 6.5 | 16.5 | 1000 | 4445 | 300 | 1584 |
| 48 | **HDR048** | 0.804 | 20.4 | 271 | 403 | 12.1 | 30.6 | 8.0 | 20.4 | 1000 | 4445 | 300 | 1584 |

**PLENUM RATED TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIMENSIONS | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 2 | **HDP002** | 0.256 | 6.5 | 33 | 49 | 3.8 | 9.8 | 2.6 | 6.5 | 150 | 660 | 45 | 198 |
| 4 | **HDP004** | 0.256 | 6.5 | 35 | 53 | 3.8 | 9.8 | 2.6 | 6.5 | 150 | 660 | 45 | 198 |
| 6 | **HDP006** | 0.317 | 8.1 | 56 | 83 | 4.8 | 12.1 | 3.2 | 8.1 | 150 | 660 | 45 | 198 |
| 12 | **HDP012** | 0.472 | 12.0 | 124 | 185 | 7.1 | 18.0 | 4.7 | 12.0 | 300 | 1320 | 90 | 396 |
| 24 | **HDP024** | 0.556 | 14.1 | 164 | 245 | 8.3 | 21.2 | 5.6 | 14.1 | 600 | 2640 | 180 | 792 |
| 36 | **HDP036** | 0.641 | 16.3 | 205 | 305 | 9.6 | 24.4 | 6.4 | 16.3 | 1000 | 4448 | 300 | 1320 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Tight Buffer | **AB0707** | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59.

Berk-Tek®
A NEXANS COMPANY



RoHS COMPLIANT

# CL3P-OF

COMPOSITE FIBER CABLE

Berk-Tek's **COMPOSITE COPPER/FIBER** cables incorporate high bandwidth optical fibers with insulated stranded copper conductors. A wide variety of design options are available including; up to 4 conductors ranging from #12 AWG to #18 AWG, up to 7 tight buffered fibers or 24 loose tube fibers, and interlock armoring. These cables are listed as CL3P-OF/PLTC-OF. A key application of these cables is to extend the distance that powered devices can be installed from the power source in Power over Ethernet (PoE) installations. Proper conductor size selection can increase this distance from 328 feet to several thousand feet. The powered device could be an IP camera, a wireless access point, or other building automation device located in an area where an electrical outlet is not readily available.

## FEATURES

- Multimode, Single-mode, and GIGAlite™ fibers
- CL3P-OF, dry rated
- Aluminum or steel interlock armored designs available
- Indoor/Outdoor dry water-blocked designs available

## BENEFITS

- Enables PoE equipment to be located more than 100 meters from the switch
- Cost savings versus installation of a new electrical outlet
- CL3P-OF/PLTC-OF allows cable to be installed in communication pathways
- Ease of installation
- Broad design selection allows for mix and match of copper and fiber components to specific networking applications
- Armor option adds crush resistance and is a cost effective alternative to plenum innerduct

## CONSTRUCTION

Each cable consists of multiple plenum insulated copper conductors and multiple fibers cabled together within an outer jacket. Cable design accommodates from 2 to 4 conductors and 2 to 24 fibers.

- Fibers can be tight buffered or in a loose tube
- Cable is dry-water-blocked for outdoor installations
- Aluminum (standard) or steel interlock armored cables available

## FLAME RATING

| | |
|---|---|
| Non-plenum | UL 1666, CMR, IEC 32-1 |
| Plenum | NFPA 262, CMP |
| ETL Listed | |

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| National | UL 13<br>Telcordia GR-409<br>ANSI/TIA-568-C.3<br>ANSI/ICEA S-104-696 |

## APPLICATIONS

Berk-Tek's Composite cables are suitable for all power limited applications where optical fibers are needed. Specific applications include (but not limited to):

- Power over Ethernet (PoE) length extension
- Distributed Antenna Systems (DAS) connections
- Combining control and communication in industrial pathways
- Common pathway for fiber backbone and Class 3 power supply

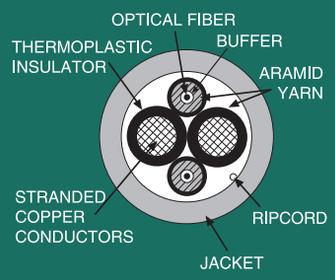

## TEMPERATURE RATING

| | LTRC & OPRC | HDRC |
|---|---|---|
| OPERATION | -40°C to +75°C | -40°C to +85°C |
| STORAGE | -60°C to +85°C | -40°C to +85°C |
| INSTALLATION | -20°C to +60°C | -10°C to +70°C |

**Sample Part Number: HDPC002CB3510/25-002X12AWG**

## AT A GLANCE

- Security camera cable
- Multiple fibers
- Indoor/outdoor
- DAS Connections




**TECHNICAL DATA — PHYSICAL**

| PART NUMBER | #FIBERS | CONDUCTOR SIZE | #CONDUCTORS | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. DISTANCE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | install | | long term | | PoE | | PoE+ | |
| | | | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | ft. | m | ft. | m |
| HDPC002-002X18AWG | 2 | 18 AWG | 2 | 0.29 | 7.4 | 64 | 95 | 4.4 | 11 | 2.9 | 7.4 | 1000 | 304 | 650 | 198 |
| HDPC002-002X12AWG | 2 | 12 AWG | 2 | 0.34 | 8.6 | 93 | 138 | 5.1 | 13 | 3.4 | 8.6 | 3850 | 1173 | 2500 | 762 |
| ACPC002-002X12AWG+001x18AWG | 2 | 2-12 AWG & 1 18 AWG | 3 | 0.36 | 9.1 | 105 | 156 | 5.4 | 13.7 | 3.6 | 9.1 | 3850 | 1173 | 2500 | 762 |
| ACPC012-002X12AWG+001x18AWG | 12 | 2-12 AWG & 1 18 AWG | 3 | 0.36 | 9.1 | 105 | 156 | 5.4 | 13.7 | 3.6 | 9.1 | 3850 | 1173 | 2500 | 762 |

**TECHNICAL DATA — ESTIMATED DISTANCE CAPABILITIES**

| CAMERA TYPE | V SUPPLY | V_MIN_IN CAMERA | CURRENT (A) | LENGTH (FT.) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 12 AWG | 14 AWG | 16 AWG | 18 AWG | 20 AWG |
| B/W CCTV Camera, 12V | 12 | 11.5 | 0.12 | 1041 | 655 | 411 | 259 | 172 |
| B/W CCTV Camera, 24V | 24 | 21 | 0.12 | 6248 | 3928 | 2467 | 1556 | 1030 |
| COLOR Video Camera, 12V | 12 | 11.5 | 0.30 | 417 | 262 | 164 | 104 | 69 |
| COLOR Video Camera, 24V | 24 | 21 | 0.30 | 2499 | 1571 | 987 | 622 | 412 |
| PAN/TILT/ZOOM Camera, 24V | 24 | 21 | 1.00 | 750 | 471 | 296 | 187 | 124 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Tight Buffer | **AB0707** | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite™ | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59.

RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# CL3R-OF

INDOOR/OUTDOOR
TIGHT BUFFER &
LOOSE TUBE OPTIONS
FIBER OPTIC CABLE


Berk-Tek's **CL3R-OF** incorporates high bandwidth optical fibers with insulated stranded copper power conductors. These composite cables enable delivery of high bandwidth optical performance to remote devices such as security cameras, access or monitoring devices. Power for these devices is provided via integral copper conductors.

## FEATURES

- Available with up to fourteen 900 micron tight buffer fibers or twenty-four 250 micron loose buffer fibers
- Each cable can accommodate from 2-7 stranded TFFN or THWN conductors in 12/14/16/18 or 20 AWG
- Wet rated for 75°C
- Dry water-blocking technology
- CL3R-OF and PLTC-OF rated

## BENEFITS

- Superior composite cable design combines optical fiber bandwidth with power for IP cameras or media converter via power conductors
- Immune to EMI/RFI
- Conductors enable device powering at distances up to 6,000 feet
- PVDF jackets, and steel and aluminum interlock armor available

## CONSTRUCTION

A wide variety of constructions are available in this family. Multiple THWN or TFFN conductors are cabled together with a tight buffer construction (ICR or PDR) or with loose tube constructions (LTR or OPR). The outer PVC jacket is suitable for outdoor installations including trays and ducts.

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| North American | UL 13<br>Telcordia GR-490<br>ANSI/ICEA S-104-696 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| IEEE 802.3 | FOIRL | 10 Mb/s |
| IEEE 802.3 | 10BASE-F | 10 Mb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1000 Mb/s |
| IEEE 802.3 | 10GBASE-X | 10 Gb/s |
| FDDI | | 100 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| | | 1.2/2.4 Gb/s |
| Fibre Channel FC-PH | | 1.062 Gb/s |

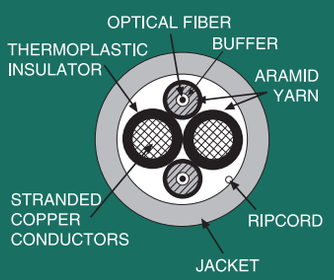
## TEMPERATURE RATING

| | LTRC & OPRC | HDRC |
|---|---|---|
| OPERATION | -40°C to +75°C | -40°C to +85°C |
| STORAGE | -60°C to +85°C | -40°C to +85°C |
| INSTALLATION | -20°C to +60°C | -10°C to +70°C |

**Sample Part Number: HDRC002CB3510/25-002X12AWG**

## AT A GLANCE

- Security camera cable
- Multiple fibers
- Indoor/outdoor
- TFFN or THWN conductors
- DAS Connections




**TECHNICAL DATA — PHYSICAL**

| PART NUMBER | #FIBERS | CONDUCTOR SIZE | #CONDUCTORS | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. DISTANCE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | install | | long term | | PoE | | PoE+ | |
| | | | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | ft. | m | ft. | m |
| **HDRC002-002X18AWG** | 2 | 18 AWG | 2 | 0.32 | 8.1 | 64 | 95 | 4.8 | 12.2 | 3.2 | 8.1 | 1000 | 304 | 650 | 198 |
| **HDRC002-002X12AWG** | 2 | 12 AWG | 2 | 0.37 | 9.4 | 93 | 138 | 5.6 | 14.1 | 3.7 | 9.4 | 3850 | 1173 | 2500 | 762 |
| **LTRC6B012-002X18AWG** | 12 | 18 AWG | 2 | 0.35 | 8.9 | 49 | 73 | 5.3 | 13.4 | 3.5 | 8.9 | 1000 | 304 | 650 | 198 |
| **LTRC012-002X12AWG** | 12 | 12 AWG | 2 | 0.38 | 9.7 | 87 | 129 | 5.7 | 14.6 | 3.8 | 9.7 | 3850 | 1173 | 2500 | 762 |
| **OPRC6B012-002X18AWG** | 12 | 18 AWG | 2 | 0.35 | 8.9 | 51 | 76 | 5.3 | 13.4 | 3.5 | 8.9 | 1000 | 304 | 650 | 198 |
| **OPRC012-002X12AWG** | 12 | 12 AWG | 2 | 0.38 | 9.7 | 88 | 131 | 5.7 | 14.6 | 3.8 | 9.7 | 3850 | 1173 | 2500 | 762 |

**TECHNICAL DATA — ESTIMATED DISTANCE CAPABILITIES**

| CAMERA TYPE | V SUPPLY | V_MIN_IN CAMERA | CURRENT (A) | LENGTH (FT.) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 12 AWG | 14 AWG | 16 AWG | 18 AWG | 20 AWG |
| **B/W CCTV Camera, 12V** | 12 | 11.5 | 0.12 | 1041 | 655 | 411 | 259 | 172 |
| **B/W CCTV Camera, 24V** | 24 | 21 | 0.12 | 6248 | 3928 | 2467 | 1556 | 1030 |
| **COLOR Video Camera, 12V** | 12 | 11.5 | 0.30 | 417 | 262 | 164 | 104 | 69 |
| **COLOR Video Camera, 24V** | 24 | 21 | 0.30 | 2499 | 1571 | 987 | 622 | 412 |
| **PAN/TILT/ZOOM Camera, 24V** | 24 | 21 | 1.00 | 750 | 471 | 296 | 187 | 124 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Tight Buffer | **AB0707** | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite™ | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59.

Berk-Tek®
A NEXANS COMPANY



RoHS COMPLIANT

**ADVENTUM** cables are designed to be used in indoor/outdoor and riser- and plenum-rated environments. This cable design affords the installer the ability to place cable anywhere in a network, bypassing the traditional transition points required in most installations, saving significant cost over traditional OSP cables. Adventum utilizes Berk-Tek's unique DryGel water-blocking system and is available with optional interlocking armor in riser or plenum rating.

## FEATURES

- Designed to support Gigabit Ethernet, Gigabit ATM, Fibre Channel and other high-speed applications
- Riser or plenum rating enables installation to go directly from outside plant to riser shaft with no transition points
- Cable core and buffer tubes use DryGel water-blocking system
- DryGel blocked, color-coded loose tubes containing up to 12, 250 µm, individually colored fibers
- Interlocking armor designs available

## BENEFITS

- No transition point required, available in riser and plenum rated
- Greatly reduced installation time and cost because there is no cleaning of gels required for installation
- System grounding requirements are eliminated (for non-armored versions)

**Berk-Tek** recommends installation procedures per ANSI/TIA-758, Customer-owned Outside Plant Telecommunications Infrastructure Standard.

## FLAME RATING

OFNR/FT-4
OFNP/FT-6

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| North American | Telcordia GR-409<br>ICEA S-104-696 &<br>ANSI/ICEA S-87-640 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| IEEE 802.3 | FOIRL | 10 Mb/s |
| IEEE 802.3 | 10BASE-F | 10 Mb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1000 Mb/s |
| IEEE 802.3 | 10GBASE-X | 10 Gb/s |
| FDDI | | 100 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| | | 1.2/2.4 Gb/s |
| Fibre Channel FC-PH | | 1.062 Gb/s |

**RISER RATED TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 6 | LTR006 | 0.255 | 6.5 | 29 | 44 | 3.8 | 9.7 | 2.6 | 6.5 | 300 | 1335 | 90 | 400 |
| 12 | LTR012 | 0.255 | 6.5 | 30 | 44 | 3.8 | 9.7 | 2.6 | 6.5 | 300 | 1335 | 90 | 400 |
| 24 | LTR0X024 | .245 x .510 | 6.2 x 12.9 | 59 | 88 | 7.7 | 19.4 | 5.1 | 13.0 | 300 | 1335 | 90 | 400 |
| 24 | LTR12B024 | 0.396 | 10.1 | 59 | 88 | 5.9 | 15.1 | 4.0 | 10.1 | 300 | 1335 | 90 | 400 |
| 48 | LTR12B048 | 0.396 | 10.1 | 60 | 90 | 5.9 | 15.1 | 4.0 | 10.1 | 300 | 1335 | 90 | 400 |
| 72 | LTR12B072 | 0.467 | 11.9 | 81 | 121 | 7.0 | 17.8 | 4.7 | 11.9 | 600 | 2670 | 200 | 890 |
| 144 | LTR12B144 | 0.696 | 17.7 | 178 | 265 | 10.4 | 26.5 | 7.0 | 17.7 | 1000 | 4448 | 300 | 1335 |
| 432 | LTR12B432 | 0.953 | 24.2 | 301 | 447 | 14.3 | 36.3 | 9.5 | 24.2 | 1000 | 4448 | 300 | 1335 |

**PLENUM RATED TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 6 | LTP006 | 0.260 | 6.6 | 30 | 45 | 3.9 | 9.9 | 2.6 | 6.6 | 300 | 1335 | 90 | 400 |
| 12 | LTP012 | 0.260 | 6.6 | 31 | 46 | 3.9 | 9.9 | 2.6 | 6.6 | 300 | 1335 | 90 | 400 |
| 24 | LTP0X024 | .245 x .510 | 6.2 x 12.9 | 58 | 87 | 7.7 | 19.4 | 5.1 | 13.0 | 300 | 1335 | 90 | 400 |
| 24 | LTP12B024 | 0.370 | 9.4 | 55 | 82 | 5.6 | 14.1 | 3.7 | 9.4 | 300 | 1335 | 90 | 400 |
| 48 | LTP12B048 | 0.370 | 9.4 | 56 | 83 | 5.6 | 14.1 | 3.7 | 9.4 | 300 | 1335 | 90 | 400 |
| 72 | LTP12B072 | 0.460 | 11.7 | 80 | 119 | 6.9 | 17.5 | 4.6 | 11.7 | 600 | 2670 | 200 | 890 |
| 144 | LTP12B144 | 0.670 | 17.0 | 212 | 315 | 10.1 | 25.5 | 6.7 | 17.0 | 1000 | 4448 | 300 | 1335 |
| 432 | LTP12B432 | 0.94 | 23.9 | 362 | 539 | 14.1 | 35.8 | 9.4 | 23.9 | 1000 | 4448 | 300 | 1335 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Loose Tube | AB0403 | 1310/1550 | 0.4/0.3 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | CB3510/25 | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite™ | LB3010/75 | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | EB3010/25 | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | XB3010/X5 | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59. Break-out kit needed for connectorization.

# ADVENTUM®

INDOOR/OUTDOOR
LOOSE TUBE
FIBER OPTIC CABLE

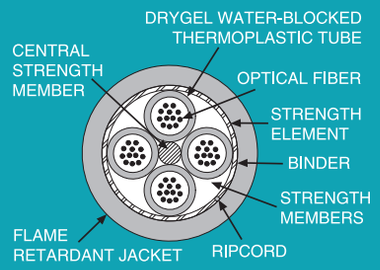

## TEMPERATURE RATING

| | |
|---|---|
| OPERATION | -40°C to +75°C |
| STORAGE | -60°C to +85°C |
| INSTALLATION | -20°C to +60°C |

**Sample Part Number: LTR12B048EB3010/25**

## AT A GLANCE

- Indoor/Outdoor
- Up to 432 fibers
- Plenum, riser or zero-halogen
- Totally dry construction




RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# HIGH DENSITY DISTRIBUTION CABLE

INDOOR
LOOSE TUBE
FIBER OPTIC CABLE


**HIGH DENSITY DISTRIBUTION CABLE (ACP)** is a compact, indoor-only loose tube cable with the strength to provide superior patching capabilities over the lifespan of your installation. By including aramid within the 3.0 mm tube containing the optical fibers, this design delivers both a compact cross-section and superior strain relief capabilities. With fiber counts of up to 432, ACP is an outstanding choice to support the parallel transmission requirements of 40/100G Ethernet.

## FEATURES

- Designed to support Gigabit Ethernet, Gigabit ATM, Fibre Channel and other high-speed applications
- Plenum rating enables installation in plenum spaces
- All-dielectric design

## BENEFITS

- Compact, plenum-rated, flexible loose tube design of all-dielectric construction allows for installation in small interior spaces
- Aramid yarn provides stronger terminations

## CONSTRUCTION

Color coded loose tubes containing up to 12, 250 µm, individually colored fibers and aramid yarn.

## FLAME RATING

OFNP/FT-6

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| National | Telcordia GR-409<br>ANSI/ICEA S-83-596<br>ANSI/TIA-568-C.3 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| IEEE 802.3 | FOIRL | 10 Mb/s |
| IEEE 802.3 | 10BASE-F | 10 Mb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1000 Mb/s |
| IEEE 802.3 | 10GBASE-X | 10 Gb/s |
| FDDI | | 100 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| | | 1.2/2.4 Gb/s |
| Fibre Channel FC-PH | | 1.062 Gb/s |

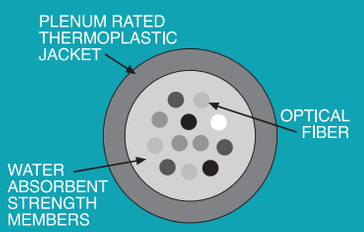
## TEMPERATURE RATING

| | |
|---|---|
| OPERATION | 0°C to +75°C |
| STORAGE | -20°C to +85°C |
| INSTALLATION | 0°C to +60°C |

**Sample Part Number: ACP012EB3010/25**

## AT A GLANCE

- Indoor only
- 2-432 fibers
- Ideal for patching applications due to extra strength at connector from aramid




**TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 12 | **ACP012** | 0.118 | 3.0 | 6 | 8 | 1.8 | 4.5 | 1.2 | 3 | 50 | 222 | 15 | 67 |
| 24 | **ACP12B024** | 0.370 | 9.4 | 57 | 84 | 5.6 | 14.1 | 3.7 | 9.4 | 300 | 1335 | 90 | 400 |
| 36 | **ACP12B036** | 0.370 | 9.4 | 57 | 85 | 5.6 | 14.1 | 3.7 | 9.4 | 600 | 2670 | 200 | 890 |
| 48 | **ACP12B048** | 0.370 | 9.4 | 58 | 86 | 5.6 | 14.1 | 3.7 | 9.4 | 300 | 1335 | 90 | 400 |
| 72 | **ACP12B072** | 0.460 | 11.7 | 86 | 128 | 6.9 | 17.5 | 4.6 | 11.7 | 600 | 2670 | 200 | 890 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Loose Tube | **AB0403** | 1310/1550 | 0.4/0.3 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite™ | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59.

Berk-Tek® A NEXANS COMPANY



RoHS COMPLIANT

# OUTSIDE PLANT

LOOSE TUBE
FIBER OPTIC CABLE

Berk-Tek's **OUTSIDE PLANT** LOOSE TUBE fiber optic cables are designed for installation in harsh environments such as direct burial, aerial lashing, conduits and pathways that are subjected to wide temperature variations. The Outside Plant product line offers two to 216 fibers per cable. These cables are thoroughly tested and verified to Telcordia GR-20 and ICEA-640 standards for outside cabling systems. Berk-Tek's outdoor loose tube cables are available with multimode, single-mode and GIGAlite™ optical fiber.

## FEATURES

- High tensile strength, crush-resistant and small-diameter design
- Single-mode, multimode and hybrid design options available
- Both all-dielectric and armored designs available
- Fully water-blocked core using dry water-blocking system
- Also available in riser-rated, low-smoke zero-halogen and armored designs

## BENEFITS

- Provides for greater pulling distances, reducing installation time
- Broad design selection allows for mix and match of fiber components to specific networking applications
- System grounding problems eliminated
- Long-term reliability
- Low cable-plant maintenance, ease of installation
- Reduced network costs

## CONSTRUCTION

Gel-filled tubes containing up to 12, 250 µm, individually colored fibers.

## OUTDOOR CONSIDERATIONS

Berk-Tek recommends that loose tube cables be utilized in an outside plant installation environment. Loose tube cables are especially recommended if aerially lashed or if the interbuilding conduit system is above the frost line and likely to fill with water.

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| North American | Telcordia GR-20<br>ANSI/ICEA S-87-640 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| IEEE 802.3 | 10GBASE-X | 10 Gb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1000 Mb/s |
| IEEE 802.3 | 10BASE-F | 10 Mb/s |
| IEEE 802.3 | FOIRL | 10 Mb/s |
| FDDI | | 100 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| | | 1.2/2.4 Gb/s |
| Fibre Channel FC-PH | | 1.062 Gb/s |


**TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 2 | **OPD002** | 0.400 | 10.2 | 54 | 81 | 6.0 | 15.2 | 4.0 | 10.2 | 450 | 2002 | 135 | 601 |
| 4 | **OPD004** | 0.400 | 10.2 | 55 | 81 | 6.0 | 15.2 | 4.0 | 10.2 | 450 | 2002 | 135 | 601 |
| 6 | **OPD006** | 0.400 | 10.2 | 55 | 81 | 6.0 | 15.2 | 4.0 | 10.2 | 450 | 2002 | 135 | 601 |
| 8 | **OPD008** | 0.400 | 10.2 | 55 | 81 | 6.0 | 15.2 | 4.0 | 10.2 | 450 | 2002 | 135 | 601 |
| 12 | **OPD012** | 0.400 | 10.2 | 57 | 84 | 6.0 | 15.2 | 4.0 | 10.2 | 450 | 2002 | 135 | 601 |
| 24 | **OPDD12B024** | 0.451 | 11.5 | 59 | 88 | 6.8 | 17.2 | 4.5 | 11.5 | 600 | 2670 | 180 | 800 |
| 36 | **OPDD12B036** | 0.451 | 11.5 | 62 | 93 | 6.8 | 17.2 | 4.5 | 11.5 | 600 | 2670 | 180 | 800 |
| 48 | **OPDD12B048** | 0.451 | 11.5 | 65 | 97 | 6.8 | 17.2 | 4.5 | 11.5 | 600 | 2670 | 180 | 800 |
| 72 | **OPDD12B072** | 0.489 | 12.4 | 82 | 122 | 7.3 | 18.6 | 4.9 | 12.4 | 600 | 2670 | 180 | 800 |
| 96 | **OPDD12B096** | 0.565 | 14.4 | 106 | 158 | 8.5 | 21.5 | 5.7 | 14.4 | 800 | 3560 | 240 | 1068 |
| 144 | **OPDD12B144** | 0.716 | 18.2 | 169 | 252 | 10.7 | 27.3 | 7.2 | 18.2 | 1000 | 4445 | 300 | 1335 |
| 216 | **OPDD12B216** | 0.740 | 18.8 | 177 | 264 | 11.1 | 28.2 | 7.4 | 18.8 | 1000 | 4445 | 300 | 1335 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Loose Tube | **AB0403** | 1310/1550 | 0.4/0.3 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For complete fiber type details, refer to pages 56 to 59. Break-out kit needed for connectorization.

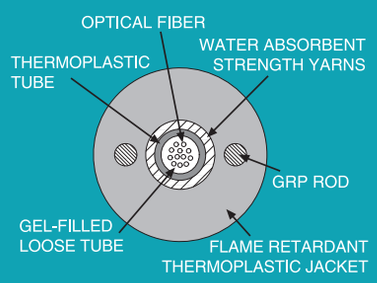
TEMPERATURE RATING

| | |
|---|---|
| OPERATION | -40°C to +75°C |
| STORAGE | -60°C to +85°C |
| INSTALLATION | -30°C to +60°C |

**Sample Part Number: OPD012AB0403**

## AT A GLANCE

- Outdoor, duct, aerial or direct burial
- Up to 216 fibers
- Riser or low-smoke zero-halogen (LSZH) options
- Dry core with gel-filled tubes




RoHS COMPLIANT



Berk-Tek®
A NEXANS COMPANY

# RODENT RESISTANT CABLE

INDOOR/OUTDOOR
LOOSE TUBE
FIBER OPTIC CABLE


Berk-Tek's **DIELECTRIC ARMOR RODENT RESISTANT** cable is designed for indoor/outdoor plant deployments where potential for cable damage from rodents is high.

## FEATURES

- High tensile strength, crush-resistant and small-diameter design
- Interlocking armor available
- Fully water-blocked core using a dry water-blocking system
- Available with new bend-insensitive single-mode fibers
- All-dielectric, indoor/outdoor rodent resistant cable
- Glass reinforced plastic (GRP) dielectric armor between dual jackets

## BENEFITS

- Enables installations to go directly from outside plant through riser shafts with no transition point requirement
- Greater pulling distances possible due to high tensile strength
- Low cable plant maintenance, ease of installation
- Reduced cable diameter, flexible, with easy access to buffer tube and fibers

## CONSTRUCTION

This unique cable design incorporates a dielectric armor shield composed of numerous glass reinforced plastic rods (GRP) that run longitudinally along the length of the cable. This dielectric armor layer is sandwiched between two riser-rated jackets.

## FLAME RATING

OFNR/FT-4

## STANDARDS

| | |
|---|---|
| North American | ANSI/ICEA S-87-640<br>ANSI/ICEA S-104-696 |
| European | EN 50173 |
| International | ISO/IEC 11801 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| | 10GBASE-SR/SW | 10 Gb/s |
| | 10GBASE-LX4 | 10 Gb/s |
| IEEE 802.3 | 100BASE-SX/FX | 1 Gb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1000 Mb/s |
| IEEE 802.3 | 10BASE-FL | 10 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| Fibre Channel FC-PH | | 1.062 Gb/s |
| | | 2.125 Gb/s |

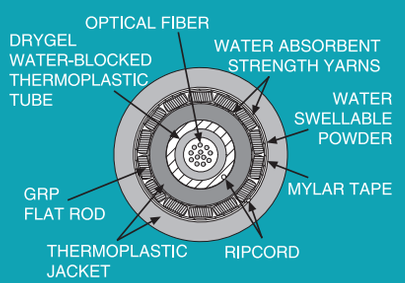
## TEMPERATURE RATING

| | |
|---|---|
| OPERATION | -40°C to +75°C |
| STORAGE | -40°C to +85°C |
| INSTALLATION | -20°C to +60°C |

**Sample Part Number: OPRFG012---**

## AT A GLANCE

- All-dielectric
- Rodent resistant
- Gel-filled loose tube cable
- Riser rated




**RISER-RATED TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 6 & 12 | **OPRFG** | 0.400 | 10.2 | 72 | 107 | 6.0 | 15.2 | 4.0 | 10.2 | 800 | 3559 | 240 | 1068 |

**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Loose Tube | **AB0403** | 1310/1550 | 0.4/0.3 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite™ | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For complete fiber type details, refer to pages 56 to 59. Break-out kit needed for connectorization.

Berk-Tek® A NEXANS COMPANY



RoHS COMPLIANT

# DROP CABLE OFNR (OFCR)

INDOOR/OUTDOOR
LOOSE TUBE
FIBER OPTIC CABLE

Berk-Tek's Indoor/Outdoor, Riser-Rated, **OPTICAL DROP CABLE** is designed especially for Last Mile, MDU, MTU and FTTx applications. An optional 26 AWG tracer wire is available for ease of cable location. Designed for aerial-lashed installations, direct burial or in conduits and pathways that are subject to wide temperature variations.

## FEATURES

- Compact, water-blocked, riser-rated, flexible, loose tube design with the option for an integral tracer wire
- High tensile strength, crush-resistant and small-diameter design
- Single-mode or multimode design options available
- All-dielectric design (OFNR)
- Gel-filled buffer tube and water-blocked core using a dry water-blocking system
- Optional 26 AWG tracer wire (OFCR)

## BENEFITS

- Enables installations to go directly from outside plant to riser shaft with no transition point requirement
- Easy cable location with optional tracer wire
- Provides for greater pulling distances, reducing installation time
- Long-term reliability
- Low cable-plant maintenance, ease-of-installation
- Reduced cable diameter, flexible, with easy access to buffer tube and fibers
- Reduced network costs

## CONSTRUCTION

Each gel-filled buffer tube contains 2-12, 250 µm, individually colored fibers.

## FLAME RATING

OFNR/FT-4

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| North American | ANSI/TIA/EIA-568-B.3<br>Telcordia GR-20<br>Telcordia GR-409<br>ANSI/ICEA S-87-640<br>ANSI/ICEA S-83-596 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| | 10GBASE-SR/SW | 10 Gb/s |
| | 10GBASE-LX4 | 10 Gb/s |
| IEEE 802.3 | 100BASE-SX/FX | 1 Gb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1000 Mb/s |
| IEEE 802.3 | 10BASE-FL | 10 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| Fibre Channel FC-PH | | 1.062 Gb/s |
| | | 2.125 Gb/s |


## TEMPERATURE RATING

| | |
|---|---|
| OPERATION | -40°C to +75°C |
| STORAGE | -40°C to +85°C |
| INSTALLATION | -20°C to +60°C |

**Sample Part Number: OPRFT002AB0403**

**RISER-RATED TECHNICAL DATA — PHYSICAL**

| FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | install | | long term | | install | | long term | |
| | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| 2-12 | **OPRF0xx (all-dielectric)** | 0.250 | 6.4 | 26 | 39 | 3.8 | 9.5 | 2.5 | 6.4 | 300 | 1335 | 90 | 400 |
| 2-12 | **OPRFT0xx (with tracer wire)** | 0.250 | 6.4 | 28 | 42 | 3.8 | 9.5 | 2.5 | 6.4 | 300 | 1335 | 90 | 400 |

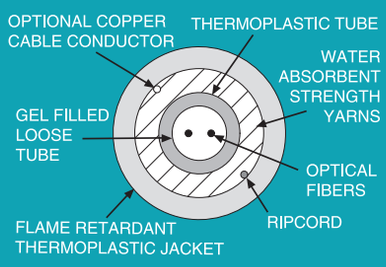
**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Loose Tube | **AB0403** | 1310/1550 | 0.4/0.3 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite™ | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For fiber details, refer to pages 56 to 59. Break-out kit needed for connectorization.

## AT A GLANCE

- FTTx drop cable
- Campus backbone, inside/outside plant
- 2-12 fibers
- Riser rated
- Optional tracer wire




RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# ARMOR-TEK™

INTERLOCK ARMOR
FIBER OPTIC CABLE


Berk-Tek's **ARMOR-TEK INTERLOCK ARMOR** fiber cables feature a tight-buffered or loose tube fiber cable and aluminum or steel spirally wrapped armor, covered with a plenum or riser-rated jacket. Armor-Tek fiber cables can be used in any of the following installation environments: indoor, indoor/outdoor, in backbones, between closets and in fiber to the desk. Armor-Tek is a viable and cost effective solution for applications where a pathway is beyond its fill ratio, for areas where extra physical protection is needed, where network security is a concern, in a fast track installation, between buildings, direct burial or in trays.

## FEATURES

- Jacketed armor that remains flexible due to the spiral wrap armoring process
- Easy one-pull installation into any environment
- Available in aluminum or steel interlock armor
- Compact outside diameters when compared to plenum innerduct or conduit
- Available in tight buffer or loose tube with 62.5 µm, 62.5 µm GIGAlite™, 50 µm GIGAlite and GIGAlite-10 multimode fibers, single-mode fiber and hybrid constructions
- Interlocking armor available without an overjacket

## BENEFITS

- Aluminum interlock offers 10 to 13 times the crush resistance of a standard dielectric fiber cable (steel, 12 to 19 times)
- Eliminates the need for conduit or plenum innerduct
- Significant cost savings in both materials and labor—up to 25%
- Suitable for hazardous environments or difficult installations
- Accommodates last minute relocations or pathway changes
- Provides a higher concentration of cables in an area than conduit
- Can be installed in campus environments due to the durability and indoor/outdoor rating of the cable
- Rugged armoring materials provide additional security for your fiber backbone

## FLAME RATING

| | |
|---|---|
| Plenum | OFCP |
| Riser | OFCR |
| LSZH | OFCR-LS |

## STANDARDS

| | |
|---|---|
| International | ISO/IEC 11801 |
| European | EN 50173 |
| North American | ANSI/TIA/EIA-568-B.3<br>ANSI/ICEA S-87-640<br>ANSI/ICEA S-83-596<br>Telcordia GR-409 |

## APPLICATIONS

| | | |
|---|---|---|
| IEEE 802.3 | 100GBASE-SR | 100 Gb/s |
| IEEE 802.3 | 40GBASE-SR | 40 Gb/s |
| IEEE 802.3 | 10GBASE-X | 10 Gb/s |
| IEEE 802.3 | 1000BASE-SX/LX | 1 Gb/s |
| IEEE 802.3 | 100BASE-FX/SX | 100 Mb/s |
| IEEE 802.3 | 10BASE-F (or FL) | 10 Mb/s |
| IEEE 802.3 | FOIRL | 10 Mb/s |
| ATM | | 155 Mb/s |
| | | 622 Mb/s |
| Fibre Channel | FC-PH | 1.062 Gb/s |
| | | 2.125 Gb/s |

## APPLICATION NOTE

Armored cable installed in an outdoor environment should be bonded when passing into an indoor environment.

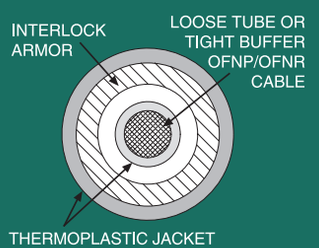
### TEMPERATURE RATING

| | PDRK | PDPK | LTRK & LTPK |
|---|---|---|---|
| OPERATION | -40°C to +75°C | -20°C to +75°C | -40°C to +75°C |
| STORAGE | -40°C to +85°C | -40°C to +85°C | -60°C to +85°C |
| INSTALLATION | -20°C to +75°C | 0°C to +75°C | -20°C to +60°C |

**Sample Part Number: PDPK012LB3010/75**

## AT A GLANCE

- Replaces innerduct
- Up to 432 fibers
- Plenum, riser or low-smoke zero-halogen (LSZH)
- Tight buffer and loose tube options




**TECHNICAL DATA**

| FIBER TYPE | PART NUMBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz•km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| LT - Standard for Loose Tube | **AB0403** | 1310/1550 | 0.4/0.3 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| PD - Standard for Tight Buffer | **AB0707** | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm - Standard | **CB3510/25** | 850/1300 | 3.5/1.0 | 200/500 | 300/600 | 36/300 |
| 50/125 µm - GIGAlite | **LB3010/75** | 850/1300 | 3.0/1.0 | 950/500 | 750/600 | 150/300 |
| 50/125 µm - GIGAlite-10 | **EB3010/25** | 850/1300 | 3.0/1.0 | 2000/500 | 1000/600 | 300/300 |
| 50/125 µm - GIGAlite-10XB | **XB3010/X5** | 850/1300 | 3.0/1.0 | 4900/500 | 1210/600 | 600/300 |

For complete fiber type details, refer to pages 56 to 59.

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## PREMISES DISTRIBUTION—TECHNICAL DATA

| | FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | install | | long term | | install | | long term | |
| | | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| PREMISES DISTRIBUTION PLENUM | 6 | PDPK006 | 0.495 | 12.6 | 78 | 116 | 7.4 | 18.9 | 5.0 | 12.6 | 100 | 445 | 30 | 133 |
| | 12 | PDPK012 | 0.523 | 13.3 | 87 | 129 | 7.8 | 19.9 | 5.2 | 13.3 | 100 | 445 | 30 | 133 |
| | 18 | PDPK018 | 0.584 | 14.8 | 111 | 166 | 8.8 | 22.3 | 5.8 | 14.8 | 150 | 667 | 45 | 200 |
| | 24 | PDPK024 | 0.584 | 14.8 | 123 | 183 | 8.8 | 22.3 | 5.8 | 14.8 | 150 | 667 | 45 | 200 |
| | 36 | PDPK12B036 | 0.821 | 20.9 | 233 | 347 | 12.3 | 31.3 | 8.2 | 20.9 | 300 | 1335 | 90 | 400 |
| | 48 | PDPK12B048 | 0.921 | 23.4 | 274 | 408 | 13.8 | 35.1 | 9.2 | 23.4 | 600 | 2640 | 180 | 800 |
| | 72 | PDPK12B072 | 0.974 | 24.7 | 361 | 537 | 14.6 | 37.1 | 9.7 | 24.7 | 600 | 2640 | 180 | 800 |
| | 96 | PDPK12B096 | 1.225 | 31.1 | 503 | 749 | 18.4 | 46.7 | 12.3 | 31.1 | 600 | 2640 | 180 | 800 |
| | 120 | PDPK12B120 | 1.225 | 31.1 | 492 | 732 | 18.4 | 46.7 | 12.3 | 31.1 | 1000 | 4445 | 300 | 1335 |
| | 144 | PDPK12B144 | 1.225 | 31.1 | 508 | 756 | 18.4 | 46.7 | 12.3 | 31.1 | 1000 | 4445 | 300 | 1335 |
| PREMISES DISTRIBUTION RISER | 6 | PDRK006 | 0.624 | 15.8 | 120 | 179 | 9.4 | 23.8 | 6.2 | 15.8 | 150 | 667 | 45 | 200 |
| | 12 | PDRK012 | 0.624 | 15.8 | 126 | 188 | 9.4 | 23.8 | 6.2 | 15.8 | 150 | 667 | 45 | 200 |
| | 18 | PDRK018 | 0.624 | 15.8 | 134 | 199 | 9.4 | 23.8 | 6.2 | 15.8 | 150 | 667 | 45 | 200 |
| | 24 | PDRK024 | 0.690 | 17.5 | 166 | 248 | 10.4 | 26.3 | 6.9 | 17.5 | 150 | 667 | 45 | 200 |
| | 36 | PDRK12B036 | 0.961 | 24.4 | 277 | 412 | 14.4 | 36.6 | 9.6 | 24.4 | 300 | 1335 | 90 | 400 |
| | 48 | PDRK12B048 | 0.961 | 24.4 | 301 | 448 | 14.4 | 36.6 | 9.6 | 24.4 | 600 | 2670 | 180 | 800 |
| | 72 | PDRK12B072 | 1.080 | 27.4 | 397 | 591 | 16.2 | 41.1 | 10.8 | 27.4 | 600 | 2670 | 180 | 800 |
| | 96 | PDRK12B096 | 1.265 | 32.1 | 521 | 775 | 19.0 | 48.2 | 12.7 | 32.1 | 600 | 2670 | 180 | 800 |
| | 120 | PDRK12B120 | 1.265 | 32.1 | 524 | 780 | 19.0 | 48.2 | 12.7 | 32.1 | 1000 | 4445 | 300 | 1335 |
| | 144 | PDRK12B144 | 1.265 | 32.1 | 539 | 802 | 19.0 | 48.2 | 12.7 | 32.1 | 1000 | 4445 | 300 | 1335 |

## ADVENTUM® INDOOR/OUTDOOR LOOSE TUBE—TECHNICAL DATA

| | FIBERS | PART NUMBER PREFIX | DIAMETER | | WEIGHT | | MIN. BEND RADIUS | | | | MAX. LOADING | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | install | | long term | | install | | long term | |
| | | | in. | mm | lb./kft. | kg/km | in. | cm | in. | cm | lb. | N | lb. | N |
| ADVENTUM INDOOR/OUTDOOR PLENUM (Available up to 432 fibers) | 6 | LTPK006 | 0.620 | 15.7 | 136 | 202 | 9.3 | 23.6 | 6.2 | 15.7 | 300 | 1335 | 90 | 400 |
| | 8 | LTPK008 | 0.620 | 15.7 | 136 | 202 | 9.3 | 23.6 | 6.2 | 15.7 | 300 | 1335 | 90 | 400 |
| | 12 | LTPK012 | 0.620 | 15.7 | 136 | 202 | 9.3 | 23.6 | 6.2 | 15.7 | 300 | 1335 | 90 | 400 |
| | 18 | LTPK0X018 | 0.851 | 21.6 | 208 | 309 | 12.8 | 32.4 | 8.5 | 21.6 | 300 | 1335 | 90 | 400 |
| | 24 | LTPK0X024 | 0.851 | 21.6 | 208 | 310 | 12.8 | 32.4 | 8.5 | 21.6 | 300 | 1335 | 90 | 400 |
| | 24 | LTPK12B024 | 0.730 | 18.5 | 184 | 274 | 11.0 | 27.8 | 7.3 | 18.5 | 600 | 2670 | 200 | 890 |
| | 36 | LTPK12B036 | 0.730 | 18.5 | 184 | 274 | 11.0 | 27.8 | 7.3 | 18.5 | 600 | 2670 | 200 | 890 |
| | 48 | LTPK12B048 | 0.730 | 18.5 | 185 | 275 | 11.0 | 27.8 | 7.3 | 18.5 | 600 | 2670 | 200 | 890 |
| | 60 | LTPK12B060 | 0.774 | 19.7 | 220 | 327 | 11.6 | 29.5 | 7.7 | 19.7 | 600 | 2670 | 200 | 890 |
| | 72 | LTPK12B072 | 0.774 | 19.7 | 220 | 327 | 11.6 | 29.5 | 7.7 | 19.7 | 600 | 2670 | 200 | 890 |
| | 84 | LTPK12B084 | 0.851 | 21.6 | 228 | 339 | 12.8 | 32.4 | 8.5 | 21.6 | 600 | 2670 | 200 | 890 |
| | 96 | LTPK12B096 | 0.851 | 21.6 | 247 | 368 | 12.8 | 32.4 | 8.5 | 21.6 | 600 | 2670 | 200 | 890 |
| | 108 | LTPK12B108 | 0.951 | 24.2 | 281 | 418 | 14.3 | 36.2 | 9.5 | 24.2 | 600 | 2670 | 200 | 890 |
| | 120 | LTPK12B120 | 0.951 | 24.2 | 304 | 452 | 14.3 | 36.2 | 9.5 | 24.2 | 600 | 2670 | 200 | 890 |
| | 132 | LTPK12B132 | 1.004 | 25.5 | 332 | 494 | 15.1 | 38.3 | 10.0 | 25.5 | 600 | 2670 | 200 | 890 |
| | 144 | LTPK12B144 | 1.004 | 25.5 | 359 | 535 | 15.1 | 38.3 | 10.0 | 25.5 | 1000 | 4448 | 300 | 1335 |
| | 216 | LTPK12B216 | 1.004 | 25.5 | 331 | 493 | 15.1 | 38.3 | 10.0 | 25.5 | 1000 | 4448 | 300 | 1335 |
| ADVENTUM INDOOR/OUTDOOR RISER (Available up to 432 fibers) | 6 | LTRK006 | 0.636 | 16.2 | 138 | 205 | 9.5 | 24.2 | 6.4 | 16.2 | 300 | 1335 | 90 | 400 |
| | 8 | LTRK008 | 0.636 | 16.2 | 138 | 205 | 9.5 | 24.2 | 6.4 | 16.2 | 300 | 1335 | 90 | 400 |
| | 12 | LTRK012 | 0.636 | 16.2 | 138 | 205 | 9.5 | 24.2 | 6.4 | 16.2 | 300 | 1335 | 90 | 400 |
| | 18 | LTRK0X018 | 0.865 | 22.0 | 202 | 301 | 13.0 | 33.0 | 8.7 | 22.0 | 300 | 1335 | 90 | 400 |
| | 24 | LTRK0X024 | 0.865 | 22.0 | 202 | 301 | 13.0 | 33.0 | 8.7 | 22.0 | 300 | 1335 | 90 | 400 |
| | 24 | LTRK12B024 | 0.744 | 18.9 | 186 | 277 | 11.2 | 28.3 | 7.4 | 18.9 | 600 | 2670 | 200 | 890 |
| | 36 | LTRK12B036 | 0.744 | 18.9 | 187 | 278 | 11.2 | 28.3 | 7.4 | 18.9 | 600 | 2670 | 200 | 890 |
| | 48 | LTRK12B048 | 0.744 | 18.9 | 187 | 279 | 11.2 | 28.3 | 7.4 | 18.9 | 600 | 2670 | 200 | 890 |
| | 60 | LTRK12B060 | 0.865 | 22.0 | 232 | 346 | 13.0 | 33.0 | 8.7 | 22.0 | 600 | 2670 | 200 | 890 |
| | 72 | LTRK12B072 | 0.865 | 22.0 | 232 | 345 | 13.0 | 33.0 | 8.7 | 22.0 | 600 | 2670 | 200 | 890 |
| | 84 | LTRK12B084 | 0.865 | 22.0 | 243 | 361 | 13.0 | 33.0 | 8.7 | 22.0 | 600 | 2670 | 200 | 890 |
| | 96 | LTRK12B096 | 0.965 | 24.5 | 276 | 411 | 14.5 | 36.8 | 9.7 | 24.5 | 600 | 2670 | 200 | 890 |
| | 108 | LTRK12B108 | 0.965 | 24.5 | 292 | 435 | 14.5 | 36.8 | 9.7 | 24.5 | 600 | 2670 | 200 | 890 |
| | 120 | LTRK12B120 | 1.018 | 25.9 | 326 | 486 | 15.3 | 38.8 | 10.2 | 25.9 | 600 | 2670 | 200 | 890 |
| | 132 | LTRK12B132 | 1.018 | 25.9 | 348 | 518 | 15.3 | 38.8 | 10.2 | 25.9 | 600 | 2670 | 200 | 890 |
| | 144 | LTRK12B144 | 1.018 | 25.9 | 360 | 536 | 15.3 | 38.8 | 10.2 | 25.9 | 1000 | 4448 | 300 | 1335 |
| | 216 | LTRK12B216 | 1.018 | 25.9 | 350 | 521 | 15.3 | 38.8 | 10.2 | 25.9 | 1000 | 4448 | 300 | 1335 |

For fiber details, refer to pages 56 to 59.

Other cable types available with Armor-Tek armoring. Call Berk-Tek customer service for more information.

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# BREAK-OUT KIT

FIBER OPTIC CABLE
BUFFER TUBE
FURCATION KIT

## AT A GLANCE

- 24" or 36" options
- Available with 6 or 12 tubes
- One kit needed for each end of a terminated tube

Berk-Tek's **BUFFER TUBE BREAK-OUT KITS** are specifically designed for the termination of 6-fiber and 12-fiber loose tube cables. These buffer tube kits provide the ultimate solution for those users who want to field-install connectors. The kits provide the most compact, easy-to-install, break-out solution requiring no additional hardware or space than that for terminating tight buffered cable. They have been designed to snap together without epoxy. Kits feature a 900 µm break-out assembly using TEFLON™ color-coded tubes to match the fiber color scheme. The Break-out Assembly is available in 6-fiber and 12-fiber units in lengths of 24 or 36 inches. These different lengths provide the installer the flexibility needed for a variety of hardware options.

## FEATURES/BENEFITS

- Break-out tubing
- New snap-together unit eliminates need for epoxy
- Compact design
- Quick and easy-to-install
- Optimized for field termination of loose tube cables
- Terminates 2.4 mm and 3.0 mm buffer tubes
- Excellent fiber routing capabilities
- Bend radius protection designed into each unit

## APPLICATIONS

- Field termination of loose tube cables

**BUFFER TUBE BREAK-OUT KITS**

| PART NUMBER | LENGTH OF TUBING | NUMBER OF BUFFER TUBES |
|---|---|---|
| **10033624** | 24 inches | 12 |
| **10033625** | 36 inches | 12 |
| **10033626** | 24 inches | 6 |
| **10033627** | 36 inches | 6 |

## NOTE: PRE-POLISHED CONNECTORS TERMINATED TO ALL DRY LOOSE TUBE CABLES

- Please follow procedures for use of adhesive when using factory pre-polished connectors. Procedures available at www.berktek.com or upon request at 1-800-BERKTEK (1-800-237-5835).

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# Appendices ›




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# APPENDIX A: THE FASTEST ROUTE TO FIBER ACCURACY

Berk-Tek's Fiber Optic Cable part numbers are composed of two basic units, the Cable Prefix and the Fiber Suffix. Throughout this catalog fiber part number prefixes for each cable type are listed in the second column of the Technical Data tables. Fiber part number suffixes are located in column two of the fiber specification table. **To accurately build your fiber part number, simply select the correct prefix and suffix.** Below, you will find a more detailed explanation of our descriptive part numbering system.

Cable Prefixes are made up of the following three basic components: **Cable Type, Product Enhancements** and **Fiber Count.** Fiber Suffixes are selected from the Fiber Specification Data Table at the end of this document.

The four steps below illustrate the process of building an accurate fiber part number, using the following example:

- *Indoor/Outdoor plenum-rated cable with 48 fibers, laser optimized 50/125 µm for 10 Gb Ethernet at 300 meters*

## STEP 1: SELECT THE CORRECT PART NUMBER CODE FOR THE DESIRED CABLE TYPE FROM TABLE 1

*EXAMPLE: Indoor/Outdoor cable: Select "LT" product family - LTxxxxxxxxxxxxxx*

**TABLE 1 – BERK-TEK OPTICAL CABLE PRODUCT FAMILIES**

| | | | |
|---|---|---|---|
| **HD** | Heavy Duty (Break-Out Type), Indoor, 2 – 48F, Tight Buffer | **RD** | Ribbon Distribution Cable, 12F |
| **PD** | Premises Distribution, Indoor, 6 – 144F, Tight Buffer | **LT** | Adventum® Indoor/Outdoor, All-Dry, 6 – 432F, Loose Tube |
| **IC** | Interconnect, Indoor, 1 – 4F, Tight Buffer | **AT** | Adventum Tight-Buffered, 1 – 2F, Loose Tube |
| **MC** | Microconnect Cable, 1 – 2F, Tight Buffer | **MD** | Micro Data Center, 4 – 288F, Loose Tube |
| **TF** | Tactical Fiber Cable, Outdoor, 2 – 24F, Tight Buffer | **OP** | Outside Plant, Outdoor, 6 – 216F, Loose Tube gel-filled tubes |
| | | **AC** | High Density Distribution, Indoor, 6-432F, Loose Tube |

## STEP 2: SELECT THE CODE LETTERS FOR CABLE ENHANCEMENTS FROM TABLE 2

Enhancements include flame rating and armoring preferences, displayed in the available combinations.

*EXAMPLE: Plenum-rated cable: Select "P" enhancement code - LTPxxxxxxxxxxxxxx*

**NOTE:** If there is no "X" mark for a particular cable and enhancement combination, then the product you are interested in is a non-standard item, please contact Berk-Tek Inside Sales.

**TABLE 2 – AVAILABLE OPTICAL CABLE ENHANCEMENTS**

| ENHANCEMENT DESCRIPTION | PRODUCT ENHANCEMENT | OPTICAL FIBER CABLE TYPE | | | | | | | | | | | | EXAMPLES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AC | AT | DAR | HD | IC | LT | MC | MD | OP | PD | RD | TF | |
| Dry Core, Single Loose Tube | D | | | | | | | | | X | | | | OPD |
| Dry Core, Stranded Loose Tube | DD | | | | | | | | | X | | | | OPDD |
| Limited Combustible Flame Rated | LC | | | | | | X | | | | | | | LTLC |
| Military Tactical Cable | C | | | | | | | | | | | | X | TFC |
| Military Tactical Cable, Breakout, 2.0 mm Individual Subunits | HD | | | | | | | | | | | | X | TFHD |
| Plenum Flame Rated | P | X | X | | X | X | X | X | X | | X | X | | HDP, ICP, LTP, MCP, PDP, MDP |
| Plenum Flame Rated, Harsh Environment (Fluoropolymer Jacket) | P HE | | | | | | X | | | | X | | | LTP HE |
| Plenum Flame Rating, Interlocking Aluminum Armor | PK | | X | | | X | X | | X | | X | | | MDPK |
| Plenum Flame Rating, Interlocking Aluminum Armor w/o external sheath | PQ | | | | | | | | | | X | | | PDPQ |
| Riser Flame Rated | R | | X | X | X | X | X | X | | X | X | | | HDR, ICR, LTR, MCR, OPR, PDR |
| Riser Flame Rating, Composite Optical Power Cable | RC | | | | X | | X | | | X | | | | HDRC |
| Riser Flame Rating, Drop Cable | RF | | | | | | | | | X | | | | OPRF |
| Riser Flame Rating, Drop Cable w/Tracer Wire | RFT | | | | | | | | | X | | | | OPRFT |
| Riser Flame Rating, Interlocking Aluminum Armor | RK | | X | | X | | X | | | X | X | | | HDRK, LTRK, OPRK, PDRK |
| Riser Flame Rating, Interlocking Aluminum Armor w/o external sheath | RQ | | | | | | | | | | X | | | PDRQ |
| Riser Flame Rating, Steel Tape Armor | RA | | | | | | X | | | X | | | | LTRA, OPRA |
| Riser Flame Rating, Zero-Halogen | RZ | | X | | X | X | X | X | | X | X | | | ICRZ, MCRZ, OPRZ |
| Riser Flame Rating, Zero-Halogen, Steel Tape Armor | RZA | | | | | | | | | X | | | | OPRZA |
| Steel Tape Armor, Dry Core, Single Loose Tube | A | | | | | | | | | X | | | | OPA |
| Steel Tape Armor, Dry Core, Stranded Loose Tube | AD | | | | | | | | | X | | | | OPAD |
| Zero-Halogen (Non-Flame Rated) | Z | | | | X | | X | | | X | | X | | OPZ |
| Zero-Halogen (Non-Flame Rated), Steel Tape Armor | ZA | | | | | | | | | X | | | | OPZA |

## STEP 3: ADD THE TOTAL FIBER COUNT TO THE CABLE PART NUMBER, USING THREE DIGIT NUMERALS

For example, 6 fibers is coded as 006, 12 fibers is coded as 012, etc. A duplex design cable receives the denotation of 0X0. If you are specifying a high count fiber cable, select the subunit code from TABLE 3 and include in front of the total fiber count.

*EXAMPLE: 48 fibers - LTP12B048xxxxxxxxx*

**NOTE:** Available fiber counts vary by particular product. Refer to product pages within this catalog for specific fiber count availability. Fiber counts must be listed on product pages or included on product data sheets at www.berktek.com to be valid.

**TABLE 3 – CABLE SUBUNIT DESIGNATIONS**

| Fiber Count | Subunit Code | Total Fiber Count |
|---|---|---|
| 1 – 12F | Not Required | List as 3 digit value (example 6 Fiber = 006) |
| ≥ 12F | 12B (12 Fibers per buffer tube/subunit) | List as 3 digit value (example 48 Fiber = 048)* |

*6F Subunits available upon request

## STEP 4: ADD FIBER SUFFIX FROM TABLE 4 BASED UPON FIBER TYPE AND TRANSMISSION DISTANCE REQUIREMENTS

**NOTE:** Please note, that for single-mode fiber, fiber suffixes vary based upon cable type.

*EXAMPLE: Laser optimized 50/125 µm for 10 Gigabit Ethernet at 300 meters - LTP12B048EB3010/25*

**TABLE 4 – ATTENUATION, BANDWIDTH & APPLICATION DISTANCE SPECIFICATIONS**

| | FIBER TYPE | 62.5/125µm – STANDARD (CB) | 62.5/125µm – GIGAlite™ (GB) | 50/125µm – GIGAlite (LB) | 50/125µm – GIGAlite-10 (EB) | 50/125µm – GIGAlite-10FB (FB) | 50/125µm – GIGAlite-10XB (XB) |
|---|---|---|---|---|---|---|---|
| | ISO/IEC | OM1 | OM1 | Exceeds OM2 | OM3 | OM4 | Exceeds OM4 |
| | Wavelength (nm) | 850/1300 | 850/1300 | 850/1300 | 850/1300 | 850/1300 | 850/1300 |
| | Maximum Attenuation (db/km) | 3.5/1.0 | 3.5/1.0 | 3.0/1.0 | 3.0/1.0 | 3.0/1.0 | 3.0/1.0 |
| | Bandwidth (MHz·km) | 200/500* | 200/500* | 950**/500* | 2000**/500* | 4700**/500* | 4900**/500* |
| | DISTANCE GUARANTEES BY APPLICATION (METERS) | | | | | | |
| Ethernet (LAN) | 100 Gb/s (100GBASE-SR10) | – | – | – | 100 | 125 | 125 |
| Ethernet (LAN) | 40Gb/s (40GBASE-SR4) | – | – | – | 100 | 125 | 125 |
| Ethernet (LAN) | 10Gb/s (10GBASE-SR) | 36 | 66 | 150 | 300 | 550† | 600† |
| Ethernet (LAN) | 1Gb/s (1000BASE-SX) | 300 | 500 | 750 | 1000 | 1040 | 1210 |
| Fiber Channel (SAN) | 10Gb/s (1200-SN) | 33 | 33 | 150 | 300 | 550† | 600† |
| Fiber Channel (SAN) | 8Gb/s (800-SA) | 40 | 40 | 100 | 300 | TBD | TBD |
| Fiber Channel (SAN) | 8Gb/s (800-SN) | 21 | 21 | 50 | 150 | TBD | TBD |
| Fiber Channel (SAN) | 4Gb/s (400-SN) | 70 | 70 | 150 | 380 | TBD | TBD |
| Fiber Channel (SAN) | 2Gb/s (200-SN) | 150 | 150 | 390 | 500 | 550 | 600 |

*Overfilled Bandwidth Measurement per EIA FOTP 204—Paragraph 3.2.1. **Differential Mode Delay per EIA FOTP-220 DMD Test Measurement. Also available with single-mode fiber.
†600 m for 10GBASE-SR: 3.0 dB/km cable attenuation and 0.65 dB connection loss utilizing two mated LC connector pairs. Additional optical fiber options available. For the most current optical fiber specifications, contact Customer Service at 1-800-BERK-TEK or visit us online at www.berktek.com. Berk-Tek reserves the right to modify optical performance specifications without prior notice.

For fiber details, refer to pages 56 to 59.

## HYBRID & COMPOSITE OPTICAL CABLES

- Berk-Tek offers a broad selection of hybrid multimode/single-mode and composite copper/fiber cabling solutions
- **Hybrid cables** include two or more optical fiber types having different core diameters or dissimilar performance characteristics
- Berk-Tek standard process is to place larger core diameter fibers first in the standard color sequence:

  *EXAMPLE: A loose tube cable with 24 multimode fibers and 24 single-mode fibers will have the first multimode fibers in the blue and orange buffer tubes (12 fibers in each tube). The single-mode fibers will be within the green and brown buffer tubes.*

- **Composite cables** incorporate optical fibers along with copper conductive wires used for data or electrical power transmission

**Additional optical cable products and configurations are available**
Contact Inside Sales at 1-800-BERK-TEK (1-800-237-5835) for additional information or visit our web site at www.berktek.com.

## FIBER CABLE CONSTRUCTION GUIDE

When determining what type of fiber optic cable is best suited to your particular installation needs, you must consider the limitations and requirements of the physical environment. The tables below present the Berk-Tek recommended cable types for various environmental and installation conditions.

| RECOMMENDED ALL-DIELECTRIC DESIGNS | CABLE APPLICATIONS | | | | | |
|---|---|---|---|---|---|---|
| **FLAME RATING** | **OUTDOOR (fibers)** | **INDOOR/OUTDOOR (fibers)** | **INDOOR BACKBONE (fibers)** | **HORIZONTAL (fibers)** | **INTERCONNECT (fibers)** | **SPECIALTY** |
| Outdoor Only | OPD, OPDD (2 - 216) | — | — | — | — | TFC, TFHD, OPTF, OPFD |
| Riser (OFNR) | OPR (2 - 216)<br>DAR (2 - 12) | ATR (1 - 2), LTR (4 - 216),<br>PDR I/O(BLA) (6 - 144) | PDR (6 - 144) | ICR (1 - 2), PDR (6 - 144),<br>HDR (2 - 48) | ICR (1 - 4)<br>MCR (1 - 2) | OPRF, OPRFT |
| Plenum (OFNP) | — | ATP (1 - 2), LTP (4 - 216),<br>PDP HE(BLA) (4 - 144) | MDP (4 - 72)<br>PDP (6 - 144) | ICP (1 - 2), PDP (6 - 144),<br>RDP (12), HDP (2 - 48) | ICP (1 - 4)<br>MCP (1 - 2), RDP (12) | LTP HE |
| Zero-Halogen Riser (OFNR-LS) | OPRZ (2 - 216) | LTRZ (4 - 216), PDRZ (6 - 48),<br>OPRZ (2 - 216) | PDRZ (6 - 48) | ICRZ (1 - 2)<br>PDRZ (6 - 48) | ICRZ (1 - 4)<br>MCRZ (1 - 2) | — |
| Zero-Halogen (not rated) | OPZ (2 - 216) | PDZ (6 - 144) | — | — | — | — |

| RECOMMENDED ARMORED FIBER CABLE | CABLE APPLICATIONS | | |
|---|---|---|---|
| | **DIRECT BURIAL RODENT RESISTANT** | **INDOOR/OUTDOOR** | **INDOOR IN PLACE OF CONDUIT OR INNERDUCT** |
| Interlock Aluminum, Riser Rated | OPRK | ATRK, LTRK | PDRK, OPRK, HDRK |
| Interlock Aluminum, Plenum Rated | — | ATPK, LTPK | MDPK, PDPK |
| Interlock Aluminum, Riser Rated, Low-Smoke Zero-Halogen | OPRZK | LTRZK | — |
| Corrugated Steel Tape | OPA | — | — |
| Corrugated Steel Tape, Riser Rated, Low-Smoke Zero-Halogen | OPRZA | OPRZA | — |

Steel Interlock Armor also available

Cable Series Key for above tables: AT—Adventum® Indoor/Outdoor Tight Buffer Loose Tube; LT—Adventum Indoor/Outdoor; OP—Outside Plant; PD—Premises Distribution; IC—Interconnect; RD—12-Fiber Ribbon; MC—Microconnect (for SFF); MD Series—Micro Data Center Plenum

## FIBER TYPE GUIDE

Selecting the correct fiber type for your application needs is simple. Just consult the table below to see the recommended fiber type based upon application requirements, distance limitations and transmission options. All varieties of Berk-Tek fiber optic cable can be made with any type of fiber, ensuring that you get exactly the fiber optic cable that you need.

| RECOMMENDED FIBER TYPE (850 nm SERIAL TRANSMISSION) | | APPLICATIONS | | |
|---|---|---|---|---|
| | | **10 GIGABIT ETHERNET** | **1 GIGABIT ETHERNET** | **FAST ETHERNET (100 Mbps)** |
| DISTANCE | Up to 300 m (984 ft) | 50 µm GIGAlite™-10 | 62.5 µm Standard | 62.5 µm Standard |
| | Up to 600 m (1968 ft) | 50 µm GIGAlite-10XB | 50 µm GIGAlite (750 m) | 62.5 µm Standard |
| | Up to 1000 m (3280 ft) | Single-mode | 50 µm GIGAlite-10 | 62.5 µm Standard |
| | > 1000 meters (>3280 ft) | Single-mode | Single-mode | 62.5 µm Standard |

| RECOMMENDED FIBER TYPE (1300/1310 nm SERIAL TRANSMISSION) | | APPLICATIONS | | |
|---|---|---|---|---|
| | | **10 GIGABIT ETHERNET** | **1 GIGABIT ETHERNET** | **FAST ETHERNET (100 Mbps)** |
| DISTANCE | Up to 300 m (984 ft) | 50 µm GIGAlite-10 | 62.5 µm Standard | 62.5 µm Standard |
| | Up to 600 m (1968 ft) | Single-mode | 62.5 µm Standard | 62.5 µm Standard |
| | Up to 2000 m (6560 ft) | Single-mode | 50 µm GIGAlite | 62.5 µm Standard |
| | > 2000 meters (> 6560 ft) | Single-mode | Single-mode | Single-mode |

## FIBER AND SUBUNIT COLOR CODES*

| FIBER/ SUBUNIT NUMBER | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FIBER COLORS | | | | | | | | | | | | |
| FIBER COLOR ABBREVIATION | BLU | ORA | GRE | BRO | SLA | WHI | RED | BLA | YEL | VIO | ROS | AQU |

*Tight buffer cable color codes are labeled on both fibers and subunits according to TIA/EIA-598.

## FIBER TECHNICAL DATA

| FIBER TYPE | FIBER SUFFIX | WAVELENGTH (nm) | MAXIMUM ATTENUATION (dB/km) | BANDWIDTH (MHz • km) | DISTANCE (meters) | |
|---|---|---|---|---|---|---|
| ENHANCED[1] SINGLE-MODE | | | | | 1 GbE | 10 GbE |
| Standard for Loose Tube | AB0403 | 1310/1550 | 0.4/0.3[2] | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| Standard for Tight Buffer | AB0707 | 1310/1550 | 0.7/0.7 | N/A | ≥ 5000 @ 1310 nm | ≥ 10,000 |
| MULTIMODE | | | | | 1 GbE | 10 GbE |
| 62.5/125 µm – Standard* | CB3510/25 | 850/1300 | 3.5/1.0 | $200_3/500_3$ | 300/600 | $36/300_5$ |
| 50/125 µm – GIGAlite™* | LB3010/75 | 850/1300 | 3.0/1.0 | $950_4/500_3$ | 750/600 | $150/300_5$ |
| 50/125 µm – GIGAlite-10* | EB3010/25 | 850/1300 | 3.0/1.0 | $2000_4/500_3$ | 1000/600 | $300/300_5$ |
| 50/125 µm – GIGAlite-10FB | FB3010/F5 | 850/1300 | 3.0/1.0 | $4700_4/5003_3$ | 1040/600 | 550/300 |
| 50/125 µm – GIGAlite-10XB* | XB3010/X5 | 850/1300 | 3.0/1.0 | $4900_4/500_3$ | 1210/600 | $600/300_5$ |

1. Enhanced SMF-improved performance across 1260 nm to 1625 nm wavelength spectrum. Low dispersion @ 1310 nm and low attenuation in 1383 nm water-peak region allows use of extended band (1360 nm to 1460 nm). Complies with ITU-T G.652D and IEC 60793.2.BI.3. 2. Optional Maximum Attenuation values 0.3/0.2 dB/km @ 1310/1550 nm are available for certain Loose Tube cables. Contact Berk-Tek for further information. 3. Overfilled launch per EIA/TIA-455-204. 4. Effective Modal Bandwidth as characterized by Differential Mode Delay (DMD) measurement per EIA/TIA-455-204. 5. 10 GbE transmission distance @ 1300 nm applies to 10GBASE-LX4 (CWDM) only. *No Mode Conditioning Patch Cord required. All 10 GbE transmission distances (except GIGAlite-10XB) @ 850 nm assume a maximum cable attenuation of 3.0 dB/km and a connection and splice loss of 0.8 dB. For GIGAlite-10XB, a maximum cable attenuation of 3.0 dB/km and a connection and/or splice loss of 0.65 dB is assumed.

Support for legacy system designs and specialty fiber types are available. Contact Customer Service for special glass code designations and for more information at 1-800-BERK-TEK. For the most current optical fiber specifications, please visit our website at www.berktek.com. Berk-Tek reserves the right to modify optical performance specifications without prior notice.

## OUTER CABLE SHEATH COLOR BASED UPON CABLE AND FIBER TYPE

| FIBER TYPE | ACP, LTP, LTP HE<br>LTPK<br>MDP, MDPK | DAR, LTR, LTRA, LTRC, LTRK<br>OPA, OPAD, OPD, OPDD, OPFD, OPTF<br>OPR, OPRA, OPRC, OPRF, OPRFT<br>OPRK, OPRZ, OPRZA<br>OPZ, OPZA | HDP, HDPK, HDR, HDRK, HDRZ<br>ICP, ICR, ICRZ<br>MCP, MCR, MCRZ<br>PDP, PDPK, PDR, PDRK, RDP | ATP, ATPK, ATR, ATRK,<br>HDRC, PDR-I/O(BLA),<br>PDP-HE(BLA), TFC/TFHD, TFHC |
|---|---|---|---|---|
| GIGAlite-10XB (50/125 µm) (XB) | XB3010/X5 | XB3010/X5 | XB3010/X5 | XB3010/X5 |
| GIGAlite-10FB (50/125 µm) (FB) | FB3010/F5 | FB3010/F5 | FB3010/F5 | FB3010/F5 |
| GIGAlite-10 (50/125 µm) (EB) | EB3010/25 | EB3010/25 | EB3010/25 | EB3010/25 |
| GIGAlite (50/125 µm) (LB) | LB3010/75 | LB3010/75 | LB3010/75 | LB3010/75 |
| Multimode (62.5/125 µm) (CB) | CB3510/25 | CB3510/25 | CB3510/25 | CB3510/25 |
| Enhanced Single-mode (AB) | AB0403 | AB0403 | AB0707 | AB0707 |

Aqua External Cable Sheath

Orange External Cable Sheath

Black External Cable Sheath

Yellow External Cable Sheath

RoHS COMPLIANT



Berk-Tek® A NEXANS COMPANY

# APPENDIX B: COPPER CABLE PART NUMBER CATALOG INDEX

# APPENDIX C: FIBER CABLE PART NUMBER PREFIX CATALOG INDEX

# WORKING FOR A GREENER FUTURE.

Berk-Tek, a leader in the evolution of cabling technology, is working to be a leader in ecological responsibility. A greater understanding and appreciation of the impact of manufacturing processes and product components on the environment has prompted Berk-Tek to control and ameliorate our impact with both process improvements and internal greening programs. From innovative materials development, through positive manufacturing practices and on to standards bodies contributions, Berk-Tek truly does work to steward the planet.

## ROHS

All products in this catalog manufactured in New Holland, PA, Elm City, NC, and in Fuquay-Varina, NC, meet the European Union's Restriction of Hazardous Substances (RoHS) requirements. This standard requires that products be free of lead and various other heavy metal compounds that have been shown to be detrimental to both people and the environment. By being RoHS compliant, Berk-Tek products are also compliant with California's Proposition 59, another leading piece of environmental legislation focused on improving the natural environment and safeguarding human life.

## RECYCLING

In an ideal world, no Berk-Tek scrap cable would be found in any landfills. And while that isn't the case today, we can say that we are working hard to eliminate contributions to landfills from our manufacturing facilities. Our scrap cable jacketing is reprocessed for use in other products, while our reusable copper can go back into cables or be reprocessed for other uses. In 2006, over 18 tons of copper, aluminum, and plastic were recovered.

Whenever possible we have transitioned from wooden reels to plastic reels that are made from 100% recycled materials and are themselves recyclable. Additionally, Berk-Tek has instituted an internal recycling program for all office paper and cardboard. And we continue to research new environmentally friendly materials for our products.

## RAW WATER

Berk-Tek uses an evaporation system to handle the water used throughout the manufacturing process. All sanitary water is treated on-site and meets strict EPA standards before being released into the environment. This prevents approximately 200,000 gallons of contaminated water from entering our local rivers and lakes.

## ENERGY EFFICIENT LIGHTING

Energy efficient lighting for manufacturing facilities and offices has enabled Berk-Tek to reduce our total energy demand by 10%. Installing this technology has significantly reduced the amount of carbon dioxide released into the environment—equal to saving 367 acres of forest or removing 233 cars from the road each year.

*Introducing the NEW*

# smartPAK 1500ft

*The 1500 ft innovation from Berk-Tek*


## YOU ASKED FOR IT. WE LISTENED.

Our innovative new box includes 1,500 ft of cable so your installs are more efficient than ever.

**Save time. Save money. Cut the scrap.**

**Learn more at berktek.com.**

### FEATURES AND BENEFITS

1,500 ft box virtually eliminates cable scrap when installing standards compliant 90 meter horizontal cable runs or even "typical" 45 meter runs.

- More efficient installations
- Reduction in jobsite waste
- All core UTP plenum and riser products are available in all colors


*Try the Online smartPAK Calculator to see how much you can save on your next project* — **www.smartpakcable.com**

RoHS COMPLIANT

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Berk-Tek®
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**Corporate Headquarters**
132 White Oak Road
New Holland, PA 17557
USA
TEL: 717-354-6200
TEL: 800-237-5835
FAX: 717-354-7944
www.berktek.com

**In Canada, please contact:**
Nexans Canada Inc.
140 Allstate Parkway
Markham, Ontario
L3R 0Z7 Canada
TEL: 905-944-4300
TEL: 800-237-5835
FAX: 905-944-4390
www.berktek.com

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