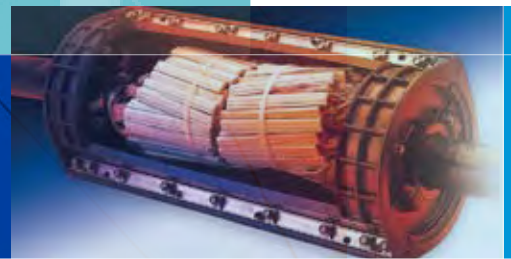


3M™ Copper Closure Outside Plant Solutions



Complete
Solutions
to Protect the Connection





Building and maintaining a reliable copper network.

Worldwide, telecommunications companies face significant challenges as they strive to provide reliable service in an increasingly competitive environment. As copper networks grow to accommodate customer demand for expanding high-speed voice, data and video services, evolving technologies must seamlessly integrate with existing networks to protect the integrity of cable splices, prevent service loss and deter costly repairs down the road.

A global resource. A simple solution.

3M provides scalable solutions to telecommunications service providers, local exchange carriers and PTTs around the world. Our products, systems and services optimize network construction and maintenance for faster, more reliable high-bandwidth transmissions.

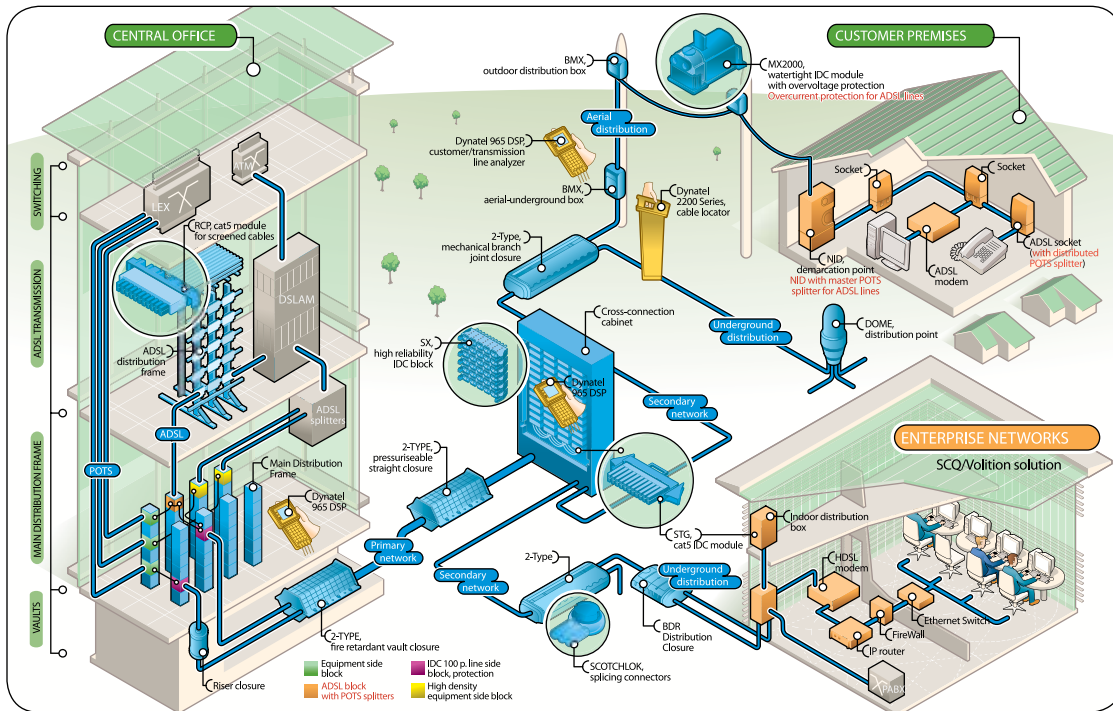
3M copper closures are designed to be easy to install and re-enter without the need for special tools or external power, maintaining low installation and maintenance costs. They are made of engineering plastic and metal to protect splices of copper twisted pair cables in the outside plant and/or central office environments of a telecom media layer network. Applications include underground, direct buried, aerial, wall and pole mount, pedestal, manholes, hand holes and central office vaults.

A higher standard for products and service.

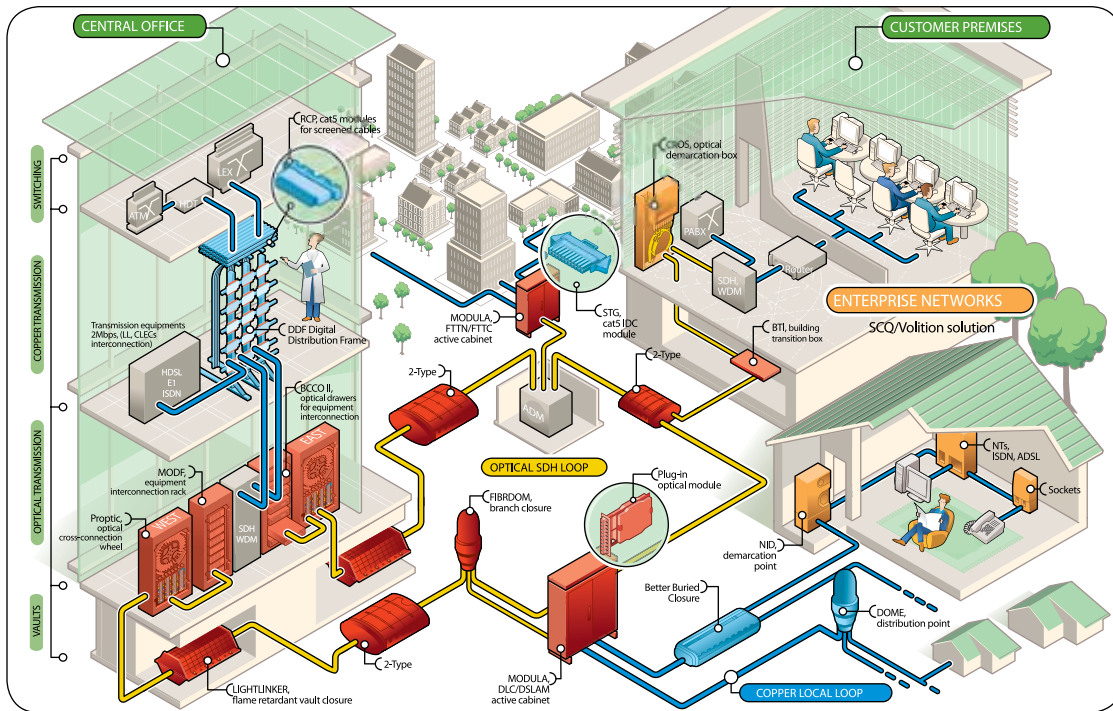
To ensure that customers get the solutions they need, 3M works to provide a higher standard of customer service through a global presence, worldwide resources and technical services just a phone call away. We continuously develop new and innovative products to deliver a full line of solutions in all applications. Our ongoing Six Sigma testing consistently improves our process and builds confidence with our customers.

3M delivers quality products and services to help you achieve and maintain a competitive edge.

Applications in Access (Last Mile) Networks



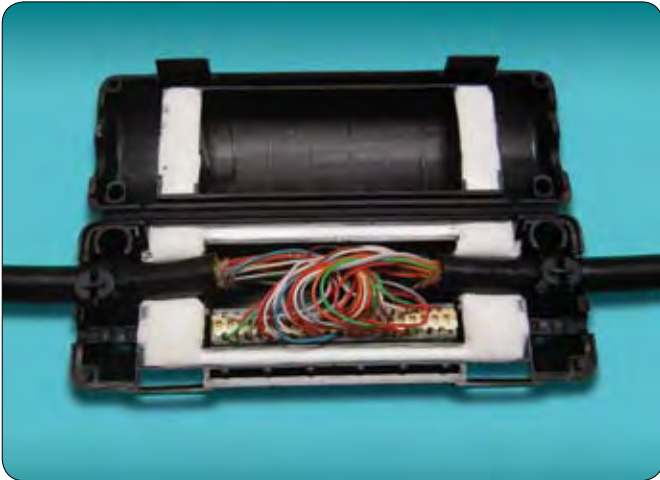
Applications in Metro SDH/SONET Loops



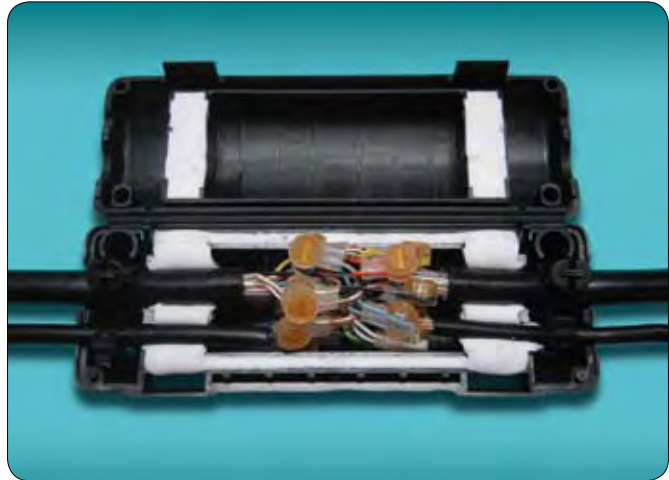
A global resource.
A simple solution.

3M™ OSC Closures

The 3M one step closure small (OSCS) and one step closure large (OSCL) closures are low pair-count copper cable splice protection closures that are simple to install and easy to re-enter. The cylindrical design is ideal for overhead and underground applications of 2/4 pairs and up to 10 pairs when used in combination with 3M™ Scotchlok™ Connectors UY-UY2 series and/or 3M™ MS™ 10-pair Modular Splicing.



3M™ One Step Closure Small



3M™ One Step Closure Large

FEATURES

- Tool-less installation
- Simple “one step” installation
- UV resistant and IP 67 protection
- Splice area is dry (no gel filling)
- No deformation on the sealing area or splice area after the closure installation

BENEFITS

- Easy to install
- Quick to install, low installation cost
- Suitable for most overhead and underground applications
- No cleaning needed upon re-entry; re-usable, re-enterable
- Reliable

3M™ OSCW Closures

The 3M one step closure for wireless service is a one-piece design, weatherproof closure that protects and seals jumper to feeder and jumper to antenna connectors in the wireless/cellular markets.

OSCW closures replace traditional tapes and heat shrink tubes. Ease of re-entry and usability provide convenience for the craftsperson and cost savings for operators.



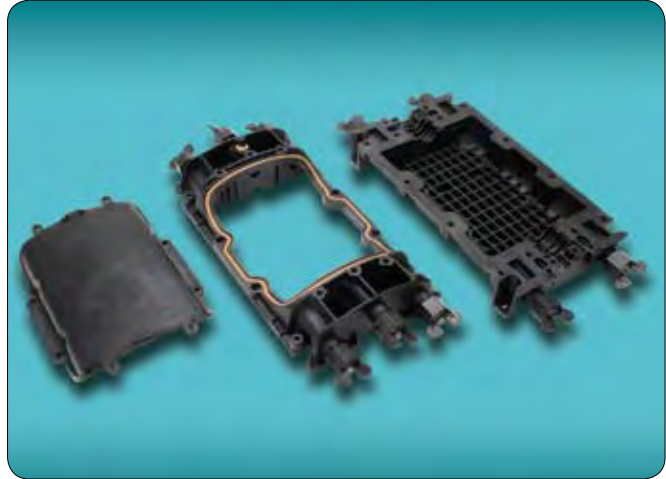
3M™ One Step Closure for Wireless

FEATURES	BENEFITS
Tool-less	Easy to install
Rigid body	Physical strength
No heat required	Minimizes safety concerns
One-piece design	Less labor; low installation cost
Made of engineering plastic	Re-usable, re-enterable



3M™ Distribution Closures BDR

The BDR closure is an underground distribution closure designed to terminate up to 20 subscribers (10 drop cables) while allowing 20-pair distribution cables to go through the casing. Its versatile design works well with some of 3M's IDC technologies to better satisfy the connecting and distribution needs in the network.



3M™ Distribution Closure BDR

FEATURES

- Standard tool operated
- Gasket sealing
- Suitable for multipurpose applications
- Mechanical closure
- Allows for many kinds of splicing configurations (butt, inline, branch, distribution)

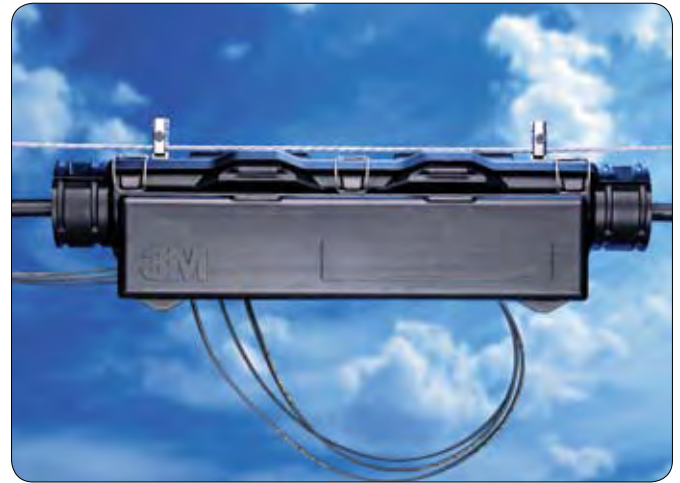
BENEFITS

- No additional investment required
- Safer, easier and quicker to install
- Flexible and versatile
- Reduces maintenance costs
- Increased productivity; ease of re-entry



3M™ SLiC™ Aerial Closures and Terminals

The single-piece, double-walled aerial closure is easily installed in construction or maintenance situations. The one-piece construction permits complete splice access after placement without removal of the closure or bonding from the cables. The closures are free breathing and suitable for straight, butt and branch splices of non-pressurized communication cables. Because of its interlocking ends, the SLiC aerial closure can expand to meet any size sheath opening without special kits, eliminating excess inventory. SLiC aerial terminals with a spiral/rubber end seal are distribution terminals and closures contained within a lightweight, double-walled, molded-plastic housing designed for fixed-count termination of aerial drop wires.



3M™ SLiC™ Aerial Closure and Terminal

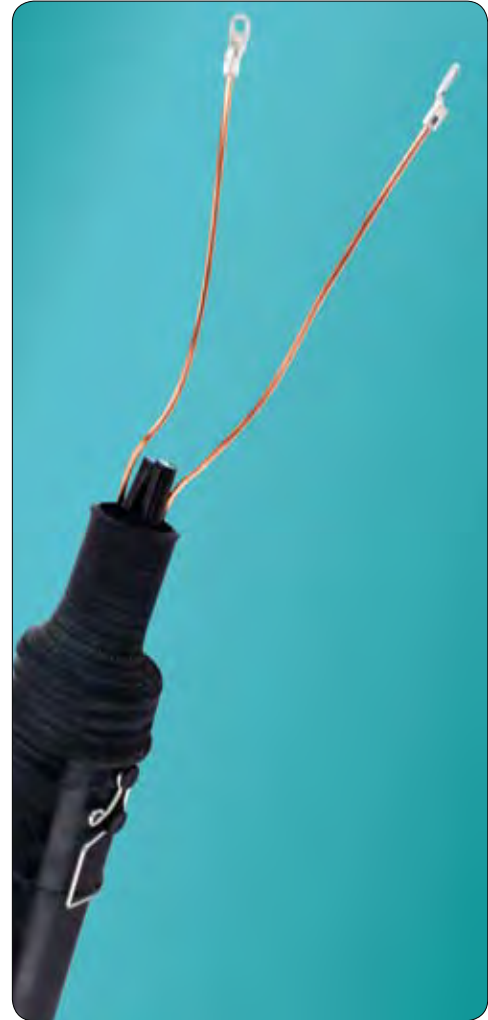
FEATURES	BENEFITS
One-piece construction	Provides easy installation, no loose parts
Double-walled, molded construction	Resists breaking or cracking
Interlocking ends	Extendible for long sheath openings
Hanger/bonding system	No external or additional bonding material required
Quick release latch	Easy re-entry
Attached sheath retention (SR) bracket (only for rigid bond)	Protects cable sheath pullout or movement
Rubber and spiral end seal	One size fits multiple cable configurations

3M™ Dome Closures

An economical method of protecting butt splices for pedestal, hand hole or pole mount applications is provided by the re-enterable PST dome closures. The closure provides protection from the harmful effects of moisture, insects and ultraviolet light, while providing easy re-entry. The splice is enclosed in a split polypropylene dome clamped together with a steel latch and sealed with an o-ring. An expanded ethylene propylene rubber tube (PST) is slipped over the base of the enclosure and onto a gel sealing collar.



3M™ Dome Closure PST



FEATURES

Unique latching system to secure dome to the sealed base

Gel end seal

Retrofits existing PST

BENEFITS

Easily re-enterable, no re-entry kit, seal undisturbed at re-entry, no tools needed to re-enter

Air-tight seal over multiple cable diameters and configurations

Multiple applications

3M™ Foam-Sealed Closures

Foam-sealed closures enclose cable plant splices in direct buried, hand hole, and manhole applications. They also protect cable splices from environmental elements found in these applications and enclose a variety of cable configurations. Additionally, the closures easily accommodate distribution drops from the main cable. Foam-sealed closures use the compound compression method to apply the pressure to the encapsulant.



3M™ Foam-Sealed Closure

FEATURES	BENEFITS
Few loose parts	Easy assembly and improved productivity
No heat required	Reduces safety concerns
Adjustable closure diameter	Minimizes compound usage and total cost
Tough outer shell	Can be used in harsh environments
Rigid body closure	Easy re-entry; physical strength
Rigid bonding assembly	Increased physical strength; provides more support to the cable
Solvent resistant	Gasoline won't erode expandable foam and Armorcast
Can be cut with a zip cord	Easy re-entry and saves time
Can be extended easily	No need to stock different sizes
Total kit	No need to order individual parts; may reduce total cost



3M™ Better Buried Closures

The 3M better buried closure is an encapsulated closure designed to be a protection device to enclose cable plant splices in direct buried, hand hole and manhole applications. It will guard splices on filled or unfilled cables from environmental elements found in the above applications. The 3M™ High Gel Re-enterable Encapsulant 8882 is designed to be an integral part of this closure. The encapsulation method can be either gravity fill or compound compression.



3M™ Better Buried Closure

FEATURES	BENEFITS
Standard tool operated	No additional investment required
No heat required	Minimizes safety concerns
Re-enterable	Allows easy maintenance
Easy to install	Minimum training required

3M™ Scotchcast™ Closures 89 Series

These rigid body closures use a gravity-fill method of encapsulating and protecting cables. They are packed with 3M™ High Gel Re-enterable Encapsulant 8882 for easy re-entry or 3M™ Encapsulant 4407 for permanent encapsulation. Both versions of the closure include 3M™ Scotchlok™ Shield Bond Connectors 4462, Scotch® Tape 130C, Scotch® Tape 88T and 3M™ Scotchcast™ Sheath Scuff 4435.



3M™ Scotchcast™ Closure 89 Series

FEATURES

- Simple construction
- Standard tool operated
- Easy to install

BENEFITS

- Easy installation
- No additional investment required
- Minimum training required

3M™ Pressure Encapsulated Apparatus Kit (PEAK) 2-Type

This pressure encapsulation technique is specially designed for spliced connections of filled communication cable using the 2-type closure system. Made for use with PIC filled, waterproof cable, it is built for underground or direct buried applications in straight or multiple branch configurations. This closure kit provides moisture protections and prevents water migration into the splice bundle.



3M™ PEAK Closure

FEATURES

- Impact-tough construction
- Pressurized static air protection
- Re-enterable closure
- Re-usable

BENEFITS

- Reliable splice protection
- Double layer of protection
- Clean and cost-efficient
- Reduced maintenance cost

3M™ Pressurized Closures 2-Type Series

The 2-type closure is a complete pressure tight re-enterable and re-usable system for protection of communications cable splice across a spectrum of applications. The 2-type system is designed for installation in a variety of aerial, buried or underground outside plant applications. Closures are available in a variety of lengths and diameters. Closure lengths range from 18 ½" (470 mm) to over 108" (2743 mm) while closure diameters range from 3" (77 mm) to 12" (305 mm). A complete 2-type packaging includes all of the components required for proper installation of cover and endplates.



3M™ Closure 2-Type



FEATURES	BENEFITS
Multiple sizes	Customizable per application
Re-enterable and re-usable	Reduced cost of labor and materials
New factory installed gasket	Higher productivity in the field; reduced field labor costs
Alignment bars	Ease of installation and facilitates proper bonding

3M™ Pressurized Closures 50/51P Series

The 50/51P series of pressurized closures is designed to be used in either aerial or underground applications. Seven sizes are available to accommodate cable diameters from 10 mm (0.4") to 71 mm (2.8") and splices up to 1,500 pairs. This closure may be used for sheath openings of 330 mm (13") or less to a maximum of 483 mm (19"). They are available in straight or branch splice configurations.



3M™ Closure 50/51P

FEATURES	BENEFITS
Impact-tough construction	Reliable splice protection
Pressurized static air protection	Double layer of protection
Re-enterable closure	Clean and cost-efficient

3M™ Flame Retardant Closures 4-Type

The closure is completely self-contained and capable of withstanding a 15-minute horizontal or vertical burn test. In addition, the flame retardant vault/building closure system meets all the performance criteria of the standard 2-type closure series so you can use the same tools and installation procedures.



3M™ Closure 4-Type

FEATURES	BENEFITS
Heat protection	Ideal for new construction or retrofitting
Standard 2-type design	Uses standard 2-type installation tools

3M™ Vault and Riser Closures K&B Series

K&B closures are strong, lightweight and protect a wide variety of vault splice configurations with an air- and water-tight seal. K&B closures offer a full product line that is simple to install and re-enter. Closures are available in standard kits to protect the majority of cable configurations and customized special closures to meet your vault requirements. All K&B closures are flame retardant.



3M™ Closure K&B Series

FEATURES	BENEFITS
Flame retardant	Protection in extreme conditions
Environmental seal	Protection from air and water



3M™ Copper Closures Accessories



High Gel Re-enterable Encapsulant (Non-Urethane Encapsulant) 8882

This completely re-enterable encapsulant delivers a high level of adhesion and excellent moisture protection at low cost. It absorbs cable-filling materials, yet remains re-enterable. It provides better penetration of splice bundles at low temperatures due to its lower viscosity and longer gel time.



Buried Service Wire Splice Kit 3832

This splice kit accommodates inline and butt splices of up to five-pair filled or unfilled service wire. One "A" size bag of 4403 encapsulant and a split bolt are provided with the kit.



PST/Gel Buried Service Wire Splice Kit 3838

This flexible and "non-compound" splicing system provides fast and reliable protection for inline, butt and extended splices of up to six-pair buried service wire. It utilizes non-toxic PST and gel technology for excellent waterproof environment.



SLiC™ 5-Pair Buried Service Wire Kit

This kit is a three-part, rigid body closure that self-encapsulates two- and five-pair buried service wire. It has a built-in bonding system and a unique sealant that bonds the buried service wire shield as the splice is put together.



Scotchcast™ Encapsulating and Blocking Compound 4407

Developed for splice encapsulation and pressure blocking, 4407 compound is a two-part compound, featuring excellent wetting properties and low viscosity, which means it flows quickly and freely. Its low temperature cure properties allow it to be used in almost any type of weather.



Pedestal Base Sealant Kit 4411

A two-part expanding sealant used to fill pedestal bases to prevent ground moisture from entering the pedestal, the sealant protects the cables against rodents, insects and moisture.



Duct Sealing Kit 4416

The 4416 duct sealing kit prevents water and other liquids from running out of a cable duct and entering a manhole or central office.



Shield Bond Connector (No Tabbing Required) 4460

The 4460 shield bond connector is designed to make a stable, low-resistance electrical connection between the shield of a communications cable and a conductor such as a strap, bar or wire. The connector consists of four parts: lower member (base), upper member (top) and two securing nuts (lock nuts).



Shield Bond Connector 4460-S

The 4460-S shield bond connector is designed to make a stable, low-resistance electrical connection between the shield of a communications cable and a conductor such as a strap, bar or wire.



Shield Bond Connector 4460-D

The 4460-D shield bond connector is a downsized version of the 4460 shield bond connector. Its small size makes it an excellent choice for cables of 100-pair or less.



Shield Bond Connector 4460-DS

The 4460-DS connector is similar to 4460-D shield connector and is supplied with a small piece of pair saver to aid connector insertion and to protect conductors. This connector is suitable for a cable size of 100 pair or less.



Shield Bond Connector Assembly 4460-D/FO

The 4460-D/FO shield bond connector is specifically designed to meet the bonding needs of fiber-optic cables that contain metallic or fiberglass strength members. A version of the 4460-D connector assembly, it utilizes two additional plates to capture and secure the strength members.



Shield Bond Connector 4462 (Designed Specifically for C.A.C.S.P. Cable)

The 4462 shield bond connector is designed to make a stable, low-resistance electrical connection between the shield of a communications cable and a conductor such as a strap, bar, wire or braid.



Shield Bond Connector 4462-FN

The 4462-FN shield bond connector includes flanged nuts.

3M™ Copper Closures Accessories (continued)



Shield Bond Connector 4462-SN

The 4462-SN shield bond connector is an improved version of the popular 4462 shield bond connector, with a longer and stronger stud to easily accommodate two bond braids (with eyelets). It is specifically designed to supply greater pullout strength than the 4462 shield bond connector.



Armorcast™ Structural Material Bulk 4560

Armorcast structural material is a flexible fiberglass knit fabric strip saturated with black resin syrup. No heat is required in the installation process, just water. It forms a tough durable covering that cures in just 20 minutes.



Shield Bond Connector 4462-SNA

The 4462-SNA connector has a longer stud, deepened nuts and an insulating shoe.



Armorcast™ Sheath Repair Kit 4561

This kit contains all products required to repair damaged cable sheath. Kit components are designed for use with Armorcast materials.



Service Wire Shield Connector 4463

The 4463 service wire shield connector is designed to make a stable, low-resistance electrical connection between the shield of a buried service wire and the ground stud of a house terminal box or other shield connector.



Filled Cable Cleaning Kit 4413

A specially formulated cleaning solvent for removing grease and flex-gel filling compound from filled core cable without damaging connectors, cable or individual conductors. No special tools are required.



Scotchlok™ Shield Bond Connector 4464

The 4464 shield bond connector is a strip of tin-plated brass, punched with mounting holes and two sets of sharp teeth designed to provide a stable, low-resistance electrical contact. Additionally, the connector provides excellent strain relief and occupies a minimum of space.



E-Z Wrap Elastic Vinyl Tape 2183

E-Z wrap tape is a tough, thin elastic vinyl material that sticks to itself when wrapped in layers. It forms a compact, durable, flexible, moisture-proof covering. Protects wire groups, splice bundles and pulp and paper insulated wire. Recommended for foam-sealed, and better buried compound compression closures.



Plugging Under Pressure (PUP) Kit (Air Pressure Blocking) 4477

This easy-to-use kit allows the craftsperson to make a pressure block without cable line air pressure shutdown. The kit saves time in making a pressure block because it contains all the necessary components in a system package.



Tartan™ Vinyl Electrical Tape 1700

1700 tape is a flame retardant, general purpose insulating tape with excellent resistance to a wide variety of contaminants and weather conditions.



Scotch® Grounding Braid 25T

This flat, tin-plated copper braid conductor is supplied for use with Scotchlok shield bond connectors. When clamped firmly, 25T braid provides low electrical resistance connections for dependable shield bonding, and its physical strength contributes to strain relief across spliced cables.



Scotch® All Weather Telephone Vinyl Plastic Tape 88T

88T tape resists water, acids, alkalis and is flame retardant. It is weather resistant and not affected by sunlight.



Open Sheath Blocking Closures 4530

This system provides full pressure blocking on air core cable (paper or pulp insulated cable that has not been treated with anti-wetting agents and PIC).



Scotch® Tape Vinyl/Mastic

Vinyl/Mastic tape is a rubber-based mastic laminated to an all-weather 0.18 mm (7 mil) vinyl, providing double duty protection in one wrap.



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Important Notice

Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use.

Warranty; Limited Remedy; Limited Liability.

3M's product warranty is stated in its Product Literature available upon request. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. Except where prohibited by law, 3M will not be liable for any loss or damage arising from this 3M product, whether direct, indirect, special, incidental or consequential regardless of the legal theory asserted.



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