

SOLUTION GUIDE

**FOR ELECTRICAL
& COMMUNICATIONS PRODUCTS**



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3M Values

Committed to customer satisfaction

Management of electrical and cable and wire installation is an industry which demands the highest of standards in terms of worker safety and component reliability. To meet these demands, it is vital that component suppliers possess a solid and comprehensive understanding of the process involved and the technologies behind the process together with a commitment to customer support. Based on these parameters, 3M is a model supplier:

- We have over 50 years experience in electrical products and processes and have developed a comprehensive range of cost-effective, quality products.
- We have an on-going commitment to research and development and the introduction of new products.
- All of our products are manufactured to ISO 9000 series standards.
- We constantly strive towards improved levels of customer and technical support, even though our existing network is second to none.

Supplier of choice and technologies

3M uses its experience and technological know-how to produce a high quality range of tapes, resins and polymeric mouldings for insulating, connecting, terminating, jointing, sealing and identifying electrical wires and cables. Our range is extremely comprehensive but we recognise that certain projects may need a 'custom-built' solution. Talk to us first when you need electrical components to meet specific job requirements.

Tradition of innovation

Without compromising customer safety, we aim to develop products which are quicker, cleaner, tougher and more reliable than anything you may have used before. Innovation is a way

of life at 3M. Our inventive culture has produced over 60,000 products that make people's lives easier, safer and better. Today, at a corporate level, around 30% of our revenue comes from products that simply did not exist four years earlier. In electrical markets, 3M also has an unparalleled track record of introducing leading-edge products and technologies providing ongoing improvements in terms of safety, security and product quality.

Over 50 years ago we introduced the first electrical PVC insulation tape Scotch® 33, the first in a line of premium electrical products.

- Cold Shrink was invented by 3M more than 25 years ago. It is now the safest, most reliable and easiest to install solution for medium voltage splicing and terminating.
- When Scotchcast™ resin joints were launched, previously unheard of levels of security and reliability of low voltage cable splicing were achieved.
- Worker safety was significantly enhanced with the arrival of Closed-Mix and Pouring (CMP) Nozzles.

Successful business with 3M

Electrical power supply installations are expected to operate efficiently and effectively over a relatively long period. When selecting a supplier, installers need to examine initial component cost in the light of the total life cycle which may include 'hidden' costs for ongoing administration, training, servicing and support. 3M products are designed for optimum performance to ensure a safe and long lasting installation. With a comprehensive range of quality products to choose from, backed-up by expert training and field support, when you select a 3M product, you choose a business partnership you can be sure of for years to come.





ELECTRICAL TAPES

Electrical Tapes

- Unrivalled reliability of Scotch® Tapes
- All low voltage insulation
- Expertise of the largest tape manufacturer in the world



WRAPPING TIPS

Vinyl Electrical Tapes - Jacketing & Mechanical Protection

- Always use a minimum of two half-lapped layers. The last layer should be wrapped in a more relaxed manner—let the last wrap relax to prevent the layer from flagging.

Rubber Tapes - Electrical Insulation, Mechanical Padding, Water Sealing and Shaping

- Wrap tape tightly to achieve the water tight seal. Rubber tapes are typically overwrapped with vinyl tape.

High Voltage Tapes - Insulating and Semi-conductive Layers

- Apply outside of roll to cable, in highly stretched half-lapped layers. Never use a semi-conductive tape as an insulation.

Mastic Compounds - Insulating, Mechanical Padding, Moisture Sealing and Shaping

- Mastic compounds are to be overwrapped with vinyl tapes to initiate flow and watertight seal. Do not apply excessive amount of mastic to prevent oozing.

Vinyl Electrical Tapes

Scotch® Vinyl Insulation Tape 22

Scotch Vinyl Insulation Tape 22 is one of 3M's thickest (10-mil) vinyl electrical tapes. It is designed for insulation applications that require greater mechanical strength and abrasion resistance. Scotch® 22 seals in all kinds of weather and provides moisture-tight electrical and mechanical protection with fewer wraps than thinner tapes.



Scotch® Vinyl Electrical Tape Super 33+

Scotch Vinyl Electrical Tape Super 33+ is a premium grade, all-weather vinyl electrical tape. Super 33+ is conformable for cold weather application to -18°C and is designed to perform in a continuous temperature environment up to 105°C. An aggressive adhesive and elastic backing enables Super 33+ to easily conform to irregular surfaces for moisture tight electrical and mechanical protection. Super 33+ provides flexibility and easy handling for all round performance.



Scotch® Vinyl Electrical Tape 35

Scotch Vinyl Electrical Colour Coding Tape 35 is a premium-grade electrical tape that stretches to conform to virtually any shape that requires colour-coded insulation. Scotch® 35 is abrasion and weather-resistant, with excellent mechanical and electrical insulation properties that wraps smoothly and holds tight over a wide range of temperatures.



Scotch® Vinyl Electrical Tape Super 88

Scotch Vinyl Electrical Tape Super 88 is a 8.5 mil heavy duty, premium grade all-weather vinyl electrical insulating tape. Super 88 maintains conformability for cold weather applications: better mechanical/abrasion resistance and quicker build-up.

Temflex™ Tape 1610

Temflex 1610 Tape is economical, flexible and a good general purpose tape.



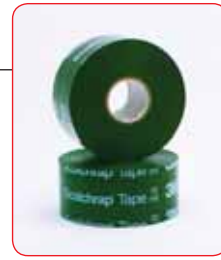
Temflex™ Tape 1710

Temflex 1710 Vinyl Electrical Tape is a good quality and economical general purpose vinyl insulating tape. It has excellent resistance to: abrasion, moisture, alkalis, acid and varying weather conditions (including sunlight). It is a polyvinyl chloride (PVC) tape that has a high wet dielectric strength, is conformable and provides excellent mechanical protection with minimum bulk. It is a UL listed and CSA certified "Insulating Tape."

Corrosion Protection Tapes

3M™ Scotchrap™ All-weather Corrosion Protection Tapes 50 and 51

Scotchrap Corrosion Protection Tapes 50 (10 mils) and 51 (20 mils) are tough, polyvinyl chloride (PVC) tapes with high-tack adhesives that resist corrosion of metal piping systems above and below ground. Both tapes apply over a wide temperature range and are resistant to impact, abrasion and punctures. Coat the pipe or other metal surfaces with Scotchrap Pipe Primer before wrapping with Scotchrap 50 or 51.



Start your job off right with Scotchrap™ Pipe Primer

A quick-dry, non-sag rubber base primer that permeates metal surface pits and irregularities, preparing the surface for tape application. Compatible with the special adhesives on Scotchrap Tapes, it enhances adhesion.



Insulating and Splicing Tapes

Scotch® Electrical Semi-conducting Tape 13

Scotch Electrical Semi-conducting Tape 13 is a highly conformable, semi-conducting Ethylene Propylene Rubber (EPR)-based, high-voltage splicing tape. Scotch Electrical Tape 13 elongates easily to conform to irregular shapes and retains its conductivity when stretched.

Scotch® Rubber Splicing Tape 23

Scotch Electrical Tape 23 is a highly conformable, self-fusing Thylene Propylene Rubber (EPR)-based, high-insulating voltage tape. Scotch 23 has a 'snakeskin' liner that is easily removed as the tape is applied.



Scotch® Electrical Shielding Tape 24

Scotch Electrical Tape 24 is an all-metal, flat, open-weave shielding braid that is compatible with power cable insulations and all high-voltage splicing and terminations materials. Scotch Electrical Tape 24 elongates easily to conform and is temperature stable.

Scotch® 25 Electrical Grounding Braid

Scotch Brand 25 Electrical Grounding Braid is an all metal woven grounding braid in a flat, cable-like form. It is conformable due to its woven construction of 240 strands of #30 AWG tinned copper wires.

- To provide a fault current path across shielded cable joints.
- For grounding high-voltage splices, terminations, cables or other cable accessories.

Scotch® Fire and Electric Arc Proofing Tape 77

Scotch Fire and Electric Arc Proofing Tape 77 is designed to protect all types of electrical cables where exposed to potential failures of other high voltage cables or exposed to other high energy cables. Its unique formulation expands in fire to form a thick char buildup between the flame and the cable. The resulting firewall acts as a heat shield and flame barrier, thus protecting the cables and accessories.

Scotch® Self-fusing Silicone Rubber Electrical Tape 70

Scotch Silicone Rubber Electrical Tape 70 is a high-temperature, arc-and track-resistant tape composed of self-fusing, inorganic silicone rubber with an easy-tear and easy-strip liner.



Scotch® Linerless Rubber Splicing Tape 130C

Scotch Electrical Tape 130C is a highly conformable, linerless Ethylene Propylene Rubber (EPR), high-voltage insulating tape that provides excellent thermal dissipation of splice heat. Scotch 130C meets industry specifications and has excellent physical and electrical properties, which provide immediate moisture seal and void-free buildups. Scotch 130C is rated up to 90°C continuous operating temperatures and short term 130°C overload service. This tape should be applied like any rubber tape: that is, the side of the tape wrapped inside the roll should be applied outside on the splice (tacky side up). This will help prevent the roll from getting progressively further away from the work area.

3M™ Linerless Splicing Compound 2242

3M Electrical Tape 2242 is a multi-purpose rubber insulating tape designed for use in splicing and terminating wires and cables rated up to 90°C. 3M Electrical Tape 2242 is a highly conformable, linerless Ethylene Propylene Rubber (EPR)-based tape.

3M™ Scotchfil™ Electrical Insulation Putty

3M Scotchfil Putty is an electrical grade, rubber-based, elastic-type putty in tape form. It can be wrapped, stretched or moulded around irregular shapes for quick, smooth insulation build-up. Use Scotchfil Putty to insulate connections up to 600 volts and to round out high-voltage splices. UL Recognised Component listing for 80°C when used in combination with Super 33+ or 88 tapes.



Scotch® Electrical Insulating Varnished Cambric Tape 2510 and 2520

Scotch Electrical Insulating Varnished Cambric Tape 2510 and 2520 are bias cotton cambric fabric tapes, oil primed and coated with high-grade yellow electrical insulating varnish for quality electrical insulating. Scotch 2510/2520 are temperature stable tape products that allow for clean re-entry of electrical connections. Scotch 2510 has no adhesive and Scotch 2520 has a pressure-sensitive adhesive.

Sealing and Insulating Tapes

Scotch® Rubber Mastic Tape 2228

Scotch Rubber Mastic Tape 2228 is a conformable self-fusing rubber electrical insulating and sealing tape. Scotch Rubber Mastic 2228 consists of Ethylene Propylene rubber (EPR) backing coated with a strong, temperature-stable mastic adhesive.

3M™ Scotch-Seal™ Mastic Tape Compound 2229

Scotch-Seal Mastic Tape Compound 2229 is designed for quick and easy insulating, padding and sealing of electrical connections. It is a conformable, durable, tacky mastic with an easy release liner for easy applications over irregular surfaces and provides excellent moisture resistance. It features superior self-healing characteristics after being punctured or cut.

Scotch® VM Tape

Scotch VM Tape is a self-fusing, rubber based insulating compound laminated to a flexible, all-weather grade PVC backing. It is resistant to abrasion, moisture alkalis, acid, copper corrosion, U.V. and varying weather conditions. Excellent moisture sealant with tough vinyl backing.



Scotch® Vinyl Mastic Pads 2200/2210

Scotch Vinyl Mastic Pads 2200 and Scotch Vinyl Mastic Rolls 2210 are self-fusing, rubber-based insulating compounds laminated to a flexible, all-weather grade PVC backing. Both rolls and pads are resistant to abrasion, moisture, alkalis, acid, copper corrosion, U.V. and varying weather conditions.

Vinyl Electrical Tapes

	Characteristics	Dimensions	Thickness	Temp. Rating
Scotch® 22	Thick PVC tape for abrasion resistance. Electrical and mechanical protection. Flame retardant and UV resistant.	48mm x 33m 24mm x 33m	10 mil	80°C
Scotch® Super 33+	Premium Grade PVC tape. Temperature range: -18 / +105°C. UV resistant and flame retardant.	19mm x 33m	7 mil	105°C
Scotch® 35	Premium PVC grade colour tape. UV resistant and flame retardant. Colours: red, yellow, blue, brown, green, white, grey, orange, violet.	19mm x 6m 19mm x 20m	7 mil	105°C
Scotch® Super 88	Premium grade heavy duty tape. Temperature range: -18 / 105°C. UV resistant and flame retardant.	19mm x 20m	8.5 mil	105°C
Temflex™ 1610	General-Use PVC tape. Colours: black, white, yellow, blue, green, brown, green/yellow, orange, grey, red.	19mm x 20m	6.3 mil	80°C
Temflex™ 1710	General-Use PVC tape. Colours: black, white, green, blue, red, green/yellow.	19mm x 20m	8 mil	80°C

Corrosion Protection Tapes

	Characteristics	Dimensions	Thickness	Temp. Rating
Scotchrap™ 50/51	All weather corrosion protection tape. Protection against abrasion, moisture, salt acids and alkalis.	25mm x 30m	50 is 10 mil 51 is 20 mil	

Insulating and Splicing Tapes

	Characteristics	Dimensions	Thickness	Temp. Rating
Scotch® 13	Semi-conductive rubber tape.	19mm x 4.5m	30 mil	Continuous 90°C Short term 130°C
Scotch® 23	Primary insulating rubber tape up to 69 kV corona resistant self-fusing, chemical resistant.	19mm x 9.1m	30 mil	Continuous 90°C Short term 130°C
Scotch® 24	Electrical shielding tape - All metal open weave shielding braid, conformable, temperature stable.	25mm x 4.5m	-	-
Scotch® 25	Grounding Braid - All metal woven braid; high current carrying capacity of 6 AWG wire; solderable.	13mm x 4.5m	-	-
Scotch® 27	Woven insulating glass cloth	12.7mm x 20m	7 mil	130°C
Scotch® 70	Self-fusing silicone rubber tape. UV, track and chemical resistant.	25mm x 9.1m	12 mil	180°C
Scotch® 77	Protects cable until limiting devices can interrupt faulted current.	38mm x 6m 75mm x 6m	30 mil	-
Scotch® 130	Linerless Rubber Splicing Tape	19mm x 9.1m	30 mil	Continuous 90°C Short term 130°C
3M™ 2242	General purpose rubber insulating tape	19mm x 4.5m	30 mil	Continuous 90°C Short term 130°C
Temflex™ 2155	Replaces 2150. Economical low voltage rubber insulating tape; self-fusing.	19mm x 6.7m	30 mil	80°C
Scotchfil™ Putty	Insulating Putty. Self-bonding	38mm x 1.5m	125 mil	80°C
Scotch® 2510	Cambric Tape Yellow Varnished non adhesive 7mil cotton biased cloth.	19mm x 18.3m	7 mil	105°C
Scotch® 2520	Cambric Tape Yellow Varnished adhesive 8mil cotton biased cloth.	19mm x 18.3m	8 mil	105°C

Sealing and Insulating Tapes

	Characteristics	Dimensions	Thickness	Temp Rating
Scotch® 2228	Rubber mastic insulation type.	50mm x 3.0m 25mm x 3.0m	65 mil	90°C 130°C
Scotch-Seal 2229	Mastic tape compound	45mm x 3.0m 25mm x 3.0m	125 mil	80°C
Scotch® VM	Vinyl Mastic Tape. Self-fusing rubber based insulating compounds laminated with a flexible, all weather grade PVC backing.	19mm x 6.0m	63 mil	80°C
Scotch® VM Pads 2210	Vinyl Mastic Pads. Self-fusing rubber based insulating compounds laminated with a flexible, all weather grade PVC backing.	165mm x 115mm	90 mil	80°C
Scotch® VM Pads 2200	Vinyl Mastic Pads. Self-fusing rubber based insulating compounds laminated with a flexible, all weather grade PVC backing.	95mm x 115mm	125 mil	80°C



WIRE CONNECTORS

Wire Connectors



Spring Connectors

Scotchlok™ Electrical Spring Connectors

Scotchlok Electrical Spring Connectors Y, R, G and B are the original colour-coded wire connectors with a unique soft shell that is easy on the fingers. They're flexible, yet durable, and provide a compact, fully-insulated connection that won't cut or abrade wires. Their torque fins are engineered to provide a comfortable and secure grip, which makes installation fast and back-off easy.

Scotchlok™ Insulation Displacement Connectors (IDC)

- Squeeze shut connector
- Crimp with slip-joint pliers
- Unique "U" contact, fully insulated
- No need to cut run wire
- No need to twist on



Quick, reliable splices are a snap. And a squeeze.

3M Scotchlok insulation displacement connectors (IDCs) are easy to use and save time - to install one, just squeeze - no stripping or twisting. Our unique "U" contact provides a dependable electrical connection.

- A "live-spring" joint is made by driving the "U" contact down into the connector.
- As the "U" contact is pressed into connector, it grasps conductors as it displaces insulation.
- Contact grips conductor and holds with a firm, resilient pressure.

IDC Connector 314

Application: Used to electrically connect two or three wire ends and insulate the connection.

- 314 version provides a moisture-resistant seal.
- Flame retardant.
- Used for pigtail 2- and 3- wire splicing.



IDC Connector 316IR

Application: Electronically connects two or three wire ends, insulates the connection, and provides a moisture resistant seal.

- Recommended for use with low energy underground circuit wires.
- Suitable for sprinkler systems, landscape lighting, and other moisture resistant applications of less than 30 volts.
- Sealant is a mineral oil-based grease.

IDC Connector 557

Application: Electronically connects two wire ends and insulates the connection.

- Designed for control circuit wiring, fixture wiring, appliance wiring, signal and PA systems, automotive/boat/RV wiring.
- Flame retardant.
- Used for pigtail splicing.
- Rated up to 600 volts.

IDC Connector 558

Application: Electronically connects a (tap) wire end to a through (run) wire and insulates the connection.

- Designed for control circuit wiring, fixture wiring, appliance wiring, signal and PA systems, automotive/boat/RV wiring.
- Flame retardant.
- Used for tap splicing.
- Rated up to 600 volts.

IDC Connector 564

Application: Electronically connects two through (run) wires and insulates the connection

- Used for parallel splicing.

IDC Connector 560

Application: Electrically connects a (tap) wire end to a through (run) wire and insulates the connection.

- Flame retardant.
- Used for tap and parallel splicing.

IDC Connector 567

Application: Electronically connects a (tap) wire end to a through (run) wire and insulates the connection.

- Flame retardant.
- Self-stripping.
- Used for tap splicing.

Colour: Brown

IDC Connector 951, 952

Application: Used to electronically tap into a wire in mid-span without cutting or stripping the wire. Connector then mates with 3M 0.250" (6,35 mm) male tabs, making a quick connect wiring connection.

- Flame retardant.
- Used for tap splicing.

IDC Connector UR2

Application: UR2 connector makes a moisture-resistant butt splice connection between three solid-copper conductors or air-core or filled cable.

IDC Connector UY2

Application: UY2 connector makes a moisture-resistant butt splice connection between two solid-copper conductors of air-core or filled cable. UY2-D connector makes a dry connection.

- Sealant is a mineral oil-based grease.

Scotchlok™ Crimping Tools

To complement its line of efficient, reliable 3M Scotchlok Connectors, 3M Scotchlok Crimping Tools fit comfortably in hand. All Scotchlok tools are engineered to provide high mechanical advantage resulting in less operator fatigue. Each tool is designed to meet specific craftsman needs.

E-9BM tool . . . for universal connector crimping

This heavy-duty tool is capable of crimping all Scotchlok connectors. With its parallel closing action and adjustable jaws, the E-9BM crimping tool features a 10-to-1 mechanical advantage which allows it to handle all wire gauges.

E-9Y . . . for two conductor splicing

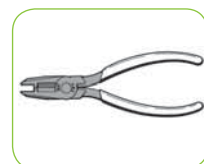
The E-9Y Tool has stepped jaws and a long nose which provide parallel crimping action. Use this tool for two conductor splicing on conductors less than 19 gauge.

E-9J - the latest innovation in industry-leading Scotchlok™ cable connection technology for telecom applications.

This lightweight, handheld tool features single-stroke, parallel crimping action with a work-saving 10:1 mechanical advantage over applied hand force. Its ergonomic design enhances user productivity by reducing fatigue and eliminating costly, time-consuming misconnects in demanding, high-volume environments.

The E-9J crimping tool is compatible with the following 3M Scotchlok Connectors - UY, UYF, UR, UY2, UY2D, UR2, UR2-D, UP2, UAL, UP3, UPB, 211, UB2A, UB2A-D, UCC, UG and UPC units across the entire range of applicable wire sizes. It provides superior operating characteristics without changing tools.





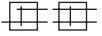




- 10:1 mechanical advantage over applied hand force
- Lightweight, ergonomic design
- Easy maintenance, no field adjustments required
- Rugged construction for daily use in harsh environments
- Reduces costly service disruptions and call-backs
- Red gripping handle

**E-9BM****E-9J****E-9Y**




Spring Connectors

Connector	Features/ Description	Maximum Voltage Rating	Wire Range (mm ²)	Temp. Rating
3M™ Scotchlok™ Connector R	Insulated w/vinyl skirt and live spring	600V (1000V for signs, lighting fixtures and luminaries)	5,0 mm ² -16,0mm ²	105°C
3M™ Scotchlok™ Connector Y	Insulated w/vinyl skirt and live spring	600V (1000V for signs, lighting fixtures and luminaries)	2,0 mm ² -17,5mm ²	105°C
3M™ Scotchlok™ Connector B	Insulated w/vinyl skirt and live spring	600V (1000V for signs, lighting fixtures and luminaries)	12,0 mm ² -36,0 mm ²	105°C
3M™ Scotchlok™ Connector G	Insulated w/vinyl skirt and live spring	600V (1000V for signs, lighting fixtures and luminaries)	8,0 mm ² -24,0 mm ²	105°C

Section 1: Specification information for 3M Scotchlok™ insulation displacement connectors

Connector	Type Connector	Special Features	Maximum Insulation	AWG (mm ²) Wire Range	Operating Temperature
314		Moisture Resistant Seal	3,94 mm	0,5-1,5	105°C
316 IR		Moisture Resistant Applications	3,94 mm	0,5-1,5	105°C
557*		Dual Element Connection	3,05 mm	0,5-1,5	105°C
558*		Flame Retardant	3,05 mm	0,5-1,5	105°C
560		Flame Retardant	3,68 mm	0,75-1,5 Solid/Stranded 14 Stranded	105°C
564		Dry Environment Applications	3,68 mm	0,75-1,5	90°C
567		Dual Element Connection	3,68 mm Tap 4,82 mm Run	0,75-1,5 Tap 3,0-4,0 Run	105°C
951		T-Tap Disconnect	3,81 mm	0,5-1,0	105°C
952		T-Tap Disconnect	3,81 mm	0,75-1,5	105°C

Section 2: Specification information for 3M Scotchlok™ insulation displacement connectors for communication

UAL		Gel filled for Aluminium Copper	2,08 mm Outside port 1,93 mm Centre port	1,15-0,5 Solid wire 0,9-0,5 Copper	-40 - 140°C
UR2		Gel filled RUS and UL	2,08 mm	19-26 (0,9-0,4) Solid Wire	-40 - 140°C
UY2		Gel filled RUS and UL Listed Polypropylene	2,08 mm	19-26 (0,9-0,4) Solid Wire	-40 - 140°C
211		Gel filled Flame Retardant Polypropylene	2,08 mm	0,9-0,4	-40 - 14°C



WIRE MARKING & IDENTIFICATION

Wire Marking & Identification

ScotchCode™

Tape Dispensers STD

The ScotchCode Tape Dispenser STD is a compact, carry-along dispenser with ten refillable compartments that hold eight-foot rolls of non-smear polyester tape. Used for marking binder groups, wire or cable, the tapes' high tack, acrylic adhesive resists solvents, oil and water, and adheres firmly to insulation surfaces. An end-loop hooks the dispenser easily to a tool pouch or belt. Dispensers can be ordered empty or filled with 10 rolls of either pre-printed numbers 0-9 or NEMA colours.

Product Number	Description
STD	Dispenser only - holds 10 rolls.
STD 0-9	Dispenser filled with 10 rolls of numbered tape (one each of 0-9).
STD-C	Dispenser filled with 10 rolls of coloured tape (one each of black, blue, brown, green, grey, orange, red, violet, white and yellow).
STD-CX	Dispenser filled with 10 rolls of coloured tape (one each of black, blue, brown, green, grey, orange, red, violet, white and yellow).

Dispenser Refill Rolls SDR

This aggressive adhesion system, combined with the flexible polyester film backing, provides a thin, conformable tape that is durable, and will hold up in industrial electrical applications. The smooth surface of this tape allows dirt and grime to be easily wiped off, providing text legibility even after extended exposure to a build-up of contamination.

Scotchcode Wire Marking Tape SDR is available in ten NEMA colours, individual numbers and consecutive numbers.

The SDR tape can be used for the following applications involving operating temperatures ranging from -40°C to 121°C:

- Marking all types of wire and cable including power, control, fibre optic, electronic, telecommunications and instrumentation
- Phase identification on large or small gauge wire or cable
- Identification of terminal blocks, terminal strips, and wire in panel boards or a piece of switchgear
- Automotive applications on tubing, hoses and replacement parts

Product Number	Description
SDR 0-9	Refill rolls of numbered tape (0-90)
SDR A-Z	Refill roll (A-Z)
SDR BK-YL	BK: Black, BL:Blue, BN: Brown, Rd: Red, VL: Violet, GN: Green, GY: Grey, OR: Orange, WH: White, YL: Yellow.

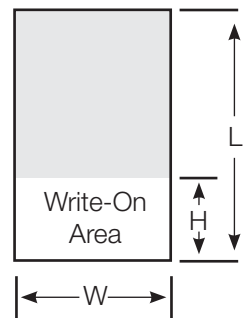
Write-On Dispensers SLW & SWD

These three self-laminating, write-on marker dispensers are handy for identifying wire and cable as well as household, automotive, plumbing and sporting equipment.

They are easy to use, refillable and come with a SMP permanent marking pen. The dispensers' design provides convenience and protects the die-cut adhesive markers.

Applications:

- **Home use:** VCRs, TVs, cable, stereo components, phones, computers, luggage, satellite installation.
- **Do-It-Yourself Home Improvements:** home security, sprinkler systems, sound systems, exterior lighting design.
- **Plumbing:** pipes, hoses, tubes, parts, vents.
- **Sports Equipment:** golf clubs, camping equipment, bags, bats, fishing rods, rackets, bicycles.
- **Equipment Identification:** hand and power tools.



Product Number	Description	Labels Per Roll	Write-On Area		Marker Size		Recommended Wire O.D.
			W	H	W	L	
SLW	Largest dispenser with tape and SMP pen	70	25mm	19mm	25mm	127mm	3,8 - 12,4mm
SWD	Regular dispenser with tape and SMP pen	250	19mm	8mm	19mm	35mm	2,3 - 7,8mm

Marker Pens SMP

3M ScotchCode™ Permanent marking Pens SMP are suggested for use with ScotchCode write-on products. These pens perform well on nonporous surfaces, have an extra-fine point with permanent, quick-drying ink and are available in black ink. They have superior UV and water resistance.



LUBRICANTS, COATINGS & SPRAYS

Lubricants, Coatings & Sprays

Lubricants

3M™ Wire Pulling Lubricant Gel WL

- Temperature stable
- Thick, non-runny gel
- Colourless and non-staining
- Low coefficient of friction
- Low residue (<3.5% solids)
- UL Listed. Broadly compatible with wire and cable jackets.

3M Wire Pulling Lubricant Gel is a water-soluble, translucent white gel that is easy to handle and apply to wire and cable without runs or drips. The lubricant produces a low coefficient of friction that lessens the chance of wire damage from high pulling forces. Not only does Wire Pulling Lubricant Gel make wire pulling jobs smoother and safer, it also wipes off the cable quickly and cleanly before terminating or splicing. The consistent gel does not liquefy, or separate with hot or cold aging. It stays thick, smooth and ready to apply.



Product	unit
WL-QT	0.95L bottle
WL-1	3.78L pail
WL-5	18.92L pail
WL-55	207.90L drum

3M™ Wire Pulling Lubricant for Communications

- Pourable
- Low residue
- Non-staining and slow drying
- Compatible with fibre optic, telephone and communications cable
- Does not separate at high or subfreezing temperatures.

3M Wire Pulling Lubricant Communications is a slow drying water-based liquid lubricant formulated for lightguide cable pulling. The lubricant produces a low coefficient of friction that lessens the chance of lightguide cable damage from high pulling forces. Wire Pulling Lubricant Communications provides maximum tension reduction for long fiber optic pulls, multiple bend pulls and pulls in hot environments. It will not stress crack low-density polyethylene and is compatible with a broad range of cable jackets.

Product	unit
WLC-QT	0.95L bottle
WLC-1	3.78L pail
WLC-5	18.92L pail
WLC-55	207.90L drum

Protectants

3M™ Scotchkote™ Electrical Coating

Scotchkote Electrical Coating provides vinyl tapes with an extra oil, moisture and corrosion-resistant layer of flexible coating for problem areas. A fast drying sealant and bonding compound, the coating is provided in a brush top 16 oz. can for quick and easy application, can containing 15 fl. oz. (0.44L) of coating. 4 fl. oz. can also available.



Product	unit
Scotchcote™	0.44L

Aerosols



Anti-Corrosion Spray 1600

Corrosion protection on: pipes and supports, welds on bitumen protected pipes, cable racks, switch and control cabinets, battery containers.

Zinc Spray 1617

Through electrochemical bonding with metal, it provides lasting protection against rust and corrosion, even on damaged surfaces. Ideal as a protective covering and as a primer for exposed metal construction. Damaged zinc layers can be repaired quite easily.

Sealer 1601 (clear)

As a protective coating on electrical connections, switches, switchgear, terminal boards, electronic components, printed circuits, coils, windings and laminated cores. In addition, for use on electrical equipment in vehicles and for repairing electric motors. Also suitable as a flexible covering on construction drawings and similar items.

Sealer Red 1602 (Ivy Spray)

Sealer Black 1603 (Ivy Spray)

Sealer Grey 1604 (Ivy Spray)

As a protective coating on electrical connections, switches, switchgear, terminal boards, electronic components, printed circuits, coils and windings. In addition, for use on electrical equipment in vehicles and for the repair of electric motors.

Dehumidifier Spray 1605

Electrical and electronic equipment, switches, relays, motors, batteries, ignition systems, tools, instruments, threads, etc.

Silicone Lubricant 1609

Lubrication: electrical equipment, locks, hinges, other moving parts. Protection: moisture and corrosion endangered plant and equipment polished surfaces and shafts, plastic, rubber, leather, etc.

Special Contact Cleaner 1625

Switches, relays, r.c.d. protection, instrumentation, time switches, computer heads, light-duty contacts for video and magnetic heads.

Degreasing Spray 1626

Ideal for dissolving greases, oils, resins and tar everywhere on electrical equipment, switches, safety cut-outs, motors and generators.

Rust Remover 1633

Inhibits rust and corrosion. Displaces moisture, dries out electrical equipment (ignition systems, generators, motors, etc.) Forms a moisture barrier to help prevent trouble before it starts.

Multi-Five Spray 1640

Scotch® 1640 Multi Five is a general purpose spray. Due to unique additives, Scotch® 1640 Multi Five provides excellent capillarity activities, lubricating, corrosion and cleaning properties, adhesion to metals and a extreme low surface tension. Therefore Scotch® 1640 Multi Five is able to release screws and remove dirt like adhesives, tar.

It displaces water immediately and avoids tracking currents. The high dielectric strength allows us to use Scotch® 1640 for sensitive switch connections. Multi Five spray is furthermore silicone and graphite free and neutral to various surfaces (plastic, rubber, printings).

Cooling Spray 1632

Refrigeration by supercooling within seconds to -400C, Scotch® 1632 localise thermal defects. Assists in repairs to electronic products: transistors, diodes, resistors, capacitors and semiconductors.

Compressed Air 1638

Universally applicable especially in hard to reach areas: eg. Cracks, scratches, joins, gaps in keyboards or any other nook or cranny. Ideal cleaning product to remove dirt from awkward areas.

	Applications & Characteristics	Size (ml)
Protection spray 1600	Insulating and covering paint-based alkyd resin Resistant to UV-light, acids, oil and alkalis Hardens into a flexible and resistant film, with excellent adhesion	400
Clear insulation spray 1601	A clear insulating and covering paint based alkyd resin Resistant to UV-light, acids, oil and alkalis and moisture Hardens into a flexible and resistant film, with excellent adhesion High dielectric strength	400
Coloured insulation spray 1602	1602: red	400
Coloured insulation spray 1603	1603: black	
Coloured insulation spray 1604	1604: grey	
Dehumidifier 1605	Forms a thin protective film, preventing ingress of moisture Displaces moisture and defrosts frozen areas Completely neutral toward paints, plastics, rubber and fabrics	400
Silicone spray 1609	General purpose spray ideal for preventative maintenance, protection and lubricating Provides lasting protection against moisture	400
Zinc spray 1617	Electronic grade sealer and insulator that air-dries in seconds For spraying over insulation on wire and cable joints as a general purpose sealer, or for touch-up insulation on motor windings and frames Provides 33,5 kV/mm insulation	400
Special contact cleaner 1625	Cleans dirt, grease and other soils Electrically neutral Leaves no residue	400
Cleaning spray 1626	Non-corrosive, can affect plastics Ideal cleaning for oil, grease resins and tar	400
Cold spray 1632	Cools down objects to minus 40°C Leaves no residue Non-toxic Ideal for identifying defects	400
Rust remover 1633	Protects against moisture and corrosion High penetration potential	400
Compressed air 1638	Ideal cleaner to remove dust Neutral and inert	400
Multi-5 spray 1640	Multi purpose spray for many applications in industrial maintenance: cleaning, rust remover, releasing agent, anti-squeak, lubrication Neutral to most materials Contains no silicone or graphite	400



DIAGNOSTIC & DETECTION

Diagnostic & Detection

- User can literally ‘spot’ and scan object from a safe distance
- Lightweight, withstands use in industrial environments
- Provide accurate measurement and personal safety
- Readable in dark areas



General Use Infrared Thermometers

3M™ Infrared Thermometer IR-500

- Temperature range of 18°C to 260°C
- 8:1 distance-to-spot ratio
- Single-point laser sighting
- Best used at a distance of less than 4’ away
- Pocket sized with easy to use one-button operations

3M™ Infrared Thermometer IR-999

- Temperature range of -32°C to 535°C
- 12:1 distance-to-spot ratio
- Single-point laser sighting

Commercial Use Infrared Thermometers

3M™ Infrared Thermometer IR-1100

- Temperature range of -32°C to 600°C
- 30:1 distance-to-spot ratio
- Single-point laser sighting
- Hi and low alarm
- Stores 12 data points in memory
- Recalls, maximum, minimum, differential, average and last temperature readings
- Adjustable emissivity

3M™ Infrared Thermometer IR-1400

- All features of IR-1100 plus:
- 50:1 distance-to-spot ratio
 - Increased temperature range of -32°C to 760°C

Professional Use Infrared Thermometers

3M™ Infrared Thermometer IR-60EXPL2

- Connects directly to a PC or printer for data download
- Stores 100 data points in memory
- Standard pack-out includes an RS232 cable, Windows® operating system-based software, power supply, contact probe, wrist strap and hard plastic case
- 3 dot laser sighting provides increased accuracy
- High alarm for scanning
- 60:1 distance-to-spot ratio
- Temperature range of -32°C to 870°C
- Adjustable emissivity

Product	Laser Sighting	Distance-to-spot Ratio	Emissivity	Maximum Temperature
IR-500	Single dot	8:1	Fixed	260°C
IR-999	Single dot	12:1	Fixed	535°C
IR-1100	Single dot	30:1	Adjustable	600°C
IR-1400	Single dot	50:1	Adjustable	760°C
IR-60EXPL2	3 dot	60:1	Adjustable	870°C



IR-500



IR-1100/1400



IR-60EXPL2



COLD SHRINK TERMINATIONS

Cold Shrink Terminations

Over 25 years ago, 3M pioneered cold shrink technology. Since then, field use and laboratory analysis have repeatedly proven its merits and reliability. Through constant innovation, we have refined cold shrink products making them better than ever. They're easier to apply and built to withstand even the most punishing environmental conditions. Enhanced performance at a lower installed cost continue to make 3M the preferred choice for cold shrink solutions.

3M Cold Shrink QT-II and the QT-III are supplied prestretched on a removable core. Removal of the core (unwind) after positioning the termination allows the product to shrink into position, providing a tight seal.

3M Cold Shrink terminations offer easy installation and reliable performance when terminating indoor and outdoor medium voltage cable.

QT-II and QT-III Cold Shrink silicone rubber is specifically formulated as a high track resistant material with hydrophobicity (water repelling action) to ensure a long life expectancy.

These cold shrink terminations are lightweight for either free-hanging or bracket mounting arrangements.

3M offers you two options for choosing a Cold Shrink Termination. The QT-III utilizes the latest technology with built-in Hi-K stress controlling mastic and silicone sealing mastic resulting in a much more user-friendly application.

The QT-II offers many of the same advantages and benefits as the QT-III but does require several additional steps during the installation.

QT-III Terminations

3M Cold Shrink QT-III terminations offer easy installation and reliable performance when terminating indoor and outdoor medium voltage cable. The unique step-core design combined with the built-in Hi-K stress control and silicone sealing compounds means simpler installation on all types of cable. The QT-III assures long-term reliability through an improved silicone rubber body with enhanced hydrophobic recovery. UV stability and track and erosion resistance. Plus its Hi-K stress control design delivers excellent BIL performance and lower surface stress resulting in a more compact termination. Through superior engineering, 3M Cold Shrink QT-III terminations deliver maximum performance.

QT-II Terminations

3M Cold Shrink QT-II terminations provide easy installation for a broad spectrum of indoor and outdoor applications. The Cold Shrink QT-II termination is based on specially formulated, track-resistant silicone rubber insulators with built-in Hi-K stress relief. The insulators are pre-stretched around a spiral-wound, plastic core. When the termination is slipped over a properly prepared cable and the core is removed, the termination immediately shrinks to the cable's dimensions. The result is a void-free, flexible seal without special tools or torches.





SPLICES

Splices

Low Voltage Splices - DBR and DBY Series

3M™ Direct Bury Products

These 3M underground electrical wire connectors splice and effectively moisture-seal two or more conductors for remote control circuits in irrigation and landscape lighting systems.

Product Number	Description and Kit Contents	Wire Range (AWG)	Volts	Temperature Range
DBR	(2) Tubes (2) 3M Scotchlok™ R Connectors	5,0 thru 16,0 mm ²	30	0° - 49°C
DBY	(2) Tubes (2) Scotchlok™ Y Connectors	2,0 thru 7,5 mm ²	30	0° - 49°C

Cold Shrink Splice Kits

- 3M, the inventor of Cold Shrink
- Pre-Stretched tubing onto a removable core
- Primary electrical insulation
- Seals tight, retains its resilience and pressure over time
- Simple installation, no torches, heat or tools required
- Resists moisture, acids and alkalis, ozone and UV-light



8420 Series Splice Kits

Cold shrink splicing products are designed using 3M's unique cold shrink delivery system. Products are supplied prestretched on a removable core for efficiency and ease of installation. Removal of the core (unwind) after positioning the splice allows the product to shrink into position forming a moisture-tight seal. The live memory action of the specially formulated material ensures a permanent, durable environmental seal and insulation.

The 8420 meets requirements of ANSI C119-1 and Western Underground Guide 2,14 for secondary splices rated up to 1kV.

Product Series	UPC (054007-)	Typical Conductor Size	Minimum Cable Diameter for Seal	Maximum** Cable Diameter Insulator Covers	Maximum Connector Length	Relaxed Tube Length	Inner Unit Pack	Case Qty
8428-8	42390	10 - 1/0 AWG (6-16mm ²)	2,5mm	20,9mm	76mm	203mm	1/ bag	10
8425-8	42391	2 - 1/0 AWG (35-50mm ²)	10,1mm	20,9mm	76mm	203mm	1/ bag	10
8426-9	34457	2/0 AWG - 250 kcmil (70-125mm ²)	13,9mm	30,1mm	127mm	229mm	1/ bag	10
8427-12	34459	250-400 kcmil (125-200mm ²)	17,5mm	35,1mm	203mm	305mm	1/ bag	10
8427-16	34460	250-400 kcmil (125-200mm ²)	17,5mm	35,1mm	305mm	406mm	1/ bag	10

QS1000 Cold Shrink Joints

QS1000 is a one piece cold shrink joint body manufactured from a specially formulated silicone material which provides flexibility, easy installation at low temperatures and superior electrical performance over a wide range of operating temperatures. The finished body is expanded and loaded onto a removable supporting core which allows the joint to be installed without the need for tools or heat.

QS1000 is suitable for use on polymeric and paper cables up to and including 11kV. The QS1000 body is used as the basis for a range of joints covering polymeric and paper in line joints and transition joints, both 3 core and single core. A full range of 11kV joints is available as part of the 3M Cold Shrink System.

- One part joint body
- 100% tested after manufacture
- No heat required
- Tool free installation
- Permanent radial pressure
- Suitable for paper and polymeric cables
- Compatible with compression and mechanical connectors
- Low temperature installation
- Provides consistent installation quality

QS2000 Cold Shrink Joints

- High performance silicone: The high performance silicone used in the manufacture of the QS2000 provides superior electrical, mechanical and sealing properties.
- Removable core: The core is removed with a simple unwinding action, allowing the moulded rubber body to shrink and seal.
- Easy installation: Installation requires no special tools... and there is no need for heat either!
- Highest quality standards: QS2000 is manufactured in ISO 9002 accredited 3M plants. Each mould body is tested electrically before release.
- Product traceability: 3M's product identification and lot number are moulded into each splice body ensuring product traceability.

A full range of 11kV-22kV joints is available as part of the cold shrink system.

Wye Resin Splice Kits

3M™ Resin Splices 0-600V

3M Scotchcast™ Wye Resin Splice Kit 90-B1 insulates and moisture-seals wye splices made with the split-bolt type connectors on cables rated through 1kV. Each kit makes one splice.

Product Series	Cable O.D. Range	
	Run	Tap
	Single Conductor Cable, Multiple Conductor, to 1000 Volt, Cable	
90-B1	13-21 mm	10 mm

Scotchcast™ 91-A Series Inline Jointing Resin Kits

The Scotchcast 91-A Series Inline jointing kits provide you with a complete range of rigid bodied resin cable joints.

The 91-A Series are tailored to join paper and plastic insulated power cables up to and including 3,3kV. They are also used for control and communication cables.

- Advanced Resin Delivery System - totally enclosed mixing and pouring.
- No leaks, no spills, no fumes.
- Safe and easy to use.
- No special tools required.
- Completely cold jointing system.
- Tough reliable joints - tongue and groove mould body
- Scotchcast 1471 polyurethane resin - an extremely reliable jointing resin, it's very high tear strength results in the strength of the joint being at least equal to that of the cable when being pulled.



APPLICATIONS

- With Scotchcast kits you can join
 - power cable, up to 3.3kV
 - control cables
 - communication cables
- You can use Scotchcast™ kits on single or multicore cable.
- Suited to paper, plastic or rubber insulated cables.
- Perfect for cable sheath repair.
- Designed for easy use in surface, direct buried or water submerged applications.

FEATURES

- Scotchcast kits include 3M'S unique and simple to use Advanced Resin Delivery system - closed mix and pour (CMP).
- Each kit gives you the flexibility to use on a range of cable sizes.
- You will find in each kit all the materials to reinsulate, moisture seal and mechanically protect one joint.
- High quality Scotchcast 1471 polyurethane resin. An unfilled resin with low viscosity gives fast mixing and pouring, and provides void free filling of the joint.
- The convenient Unipak™ resin container means perfectly proportioned components for clean easy resin handling.
- A translucent mould body enables you to inspect the joint before and during resin filling to ensure correct joint and conductor positioning.

KIT SELECTION

For most power cable applications refer to the Scotchcast Selection Guide.

When used for communication cable joints, the kit size may be determined by the number of conductors to be connected rather than the cable diameter.

As a guide, particularly for other cables, each kit will accommodate the following cable outside diameter.

SCOTCHCAST™ SELECTION GUIDE

Conductor Cross Section mm	Number of Cores			
	1	2	3	4
1	91-A11	91-A11	91-A11	91-A11
1.5	91-A11	91-A11	91-A11	91-A11
2.5	91-A11	91-A11	91-A11	91-A11
4	91-A11	91-A11	91-A11	91-A12
6	91-A11	91-A12	91-A12	91-A12
10	91-A11	91-A12	91-A12	91-A12
16	91-A12	91-A12	91-A13	91-A13
25	91-A12	91-A12	91-A13	91-A13
35	91-A12	91-A13	91-A13	91-A13
50	91-A12	91-A13	91-A14	91-A14
70	91-A12	91-A14	91-A15	91-A15
95	91-A12	91-A14	91-A15	91-A15
120	91-A13	91-A15	91-A15	91-A15
150	91-A13	91-A15	91-A16	91-A16
185	91-A13	91-A15	91-A16	91-A16
240	91-A14	91-A16	91-A16	91-A17
300	91-A14	91-A16	91-A17	91-A17
400	91-A15	91-A17	91-A17	
500	91-A15			
630	91-A15			

Scotchcast™ Kit	Cable Ømm
91-A11	8-22
91-A12	14-30
91-A13	23-35
91-A14	28-35
91-A15	33-55
91-A16	45-70

Resin Pressure System

The 3M resin pressure System is comprised of several components that are used for constructing splices or splice jackets on medium voltage power cables for harsh environments. 3M™ Scotchcast™ Electrical Insulating Resin 4 is a key component of the system, which can be used as the primary insulation for shielded and non-shielded splices rated up to 8kV.

The resin is a two-part epoxy, packaged in a special Unipak container that provides the exact mixing ratio for making a strong, dependable and long-lasting splice or splice jacket. The versatile resin system accommodates a variety of splice configurations and cables.

A resin pressure system splice is suitable for submerged locations (e.g. manholes and vaults), underground direct burial, and aerial applications.

Product	Description
4-B	Scotchcast Electrical Insulating Resin 4 (209gm)
4-C	Scotchcast Electrical Insulating Resin 4 (418gm)
E-4	Scotchcast Resin-Pressure Gun (reusable tool)
P-1B	Scotchcast Injection Fitting
P-5B	Scotchcast Nozzle
P-3	Scotchcast Spacer Tape
P-4	Scotchcast Restricting Tape

Scotchcast™ Resin

- High quality range of resins for low and medium voltage applications
- Excellent adhesion characteristics to cables
- Fits all sizes and types of closures
- Excellent mechanical, electrical and chemical resistance
- Good handling qualities
- Low exotherm
- Excellent thermal and mechanical shock resistance

Electrical Insulating Resin 4

This Scotchcast resin is a two-part epoxy insulating and encapsulating resin. Use 3M™ Scotchcast™ Resin 4 to splice solid dielectric and oil-filled cables up to 8KV. Flash point: 149°C or higher.

Electrical Resin 1471

Scotchcast No. 1471 Resin is an unfilled solvent free two component polyurethane resin for room temperature curing.

- Good adhesion on metals and different plastics
- Short cure time
- Available with Closed Mix and Pour Delivery System

Electrical Resin 1400 U

Scotchcast No. 1400U Resin is a filled solvent free two component Polyurethane Resin for room temperature curing.

- Flame retardant
- Excellent resistance against fuels and most mineral oils
- Short cure time
- Low water absorption

Flame Retardant Compound 2130

Scotchcast Flame Retardant Compound 2130 is a flexible, permanent, urethane resin used for jacket repair or splicing portable cables. It is flame retardant.

Re-enterable Polyurethane Resin 48FR

48FR Re-enterable Polyurethane resin is a halogenated, flame-retardant polyurethane resin. It was developed to satisfy the requirements of the coal mining industry, where re-entry into joints and couplers is necessary. It is a two part ambient temperature curing resin.

	Characteristics	Size	Weight
Scotchcast™ N°4	Epoxy resin	A	90g
	High moisture resistance	B	210g
	Excellent mechanical properties	C	420g
	Used in low or medium voltage applications Easily suitable for injection (RPM) technology		
Scotchcast™ 1471 N	Polyurethane resin	B	220g
	Low exothermic reaction	C	430g
	Unique Closing Mixing & Pouring (CPM) system Also used in signal and telecommunication applications		
Scotchcast™ 1400 U	Polyurethane resin	B	210g
	Flame retardant	C	420g
	Excellent resistance against fuels and most mineral oils		
	Used in mines and industrial plants "EX" approval		
Scotchcast™ 2130 U	Polyurethane resin	B	210g
	Flame retardant	C	420g
	Sea-water resistant		
	Excellent adhesion properties Highly flexible resin		
Scotchcast™ 48FR	Re-enterable Polyurethane Resin Flame retardant Used in mines	-	-



CABLE ACCESSORIES

Cable Accessories

Cold Shrink EC-Series End Caps

Product Description

3M Cold Shrink End Caps are close-ended, tubular rubber sleeves that are factory expanded and loaded into a removable core. When positioned over the end of a cable, or other cylindrical object the core is removed to provide a reliable environmental seal. Four different end caps are available to accommodate a wide range of sizes.

Features

- Simple and fast installation, no tools required.
- Accommodates size ranges from 0.46" - 3.32".
- Good abrasion resistance.
- Seals tight, retains resiliency for years.
- Water resistant.
- No mastic or tape required.
- Resists Fungus
- Resists acids and alkalis.
- Resists ozone.
- Easily removed.

Applications

Moisture sealing and physical protection for cables, pipes or other cylindrical objects.

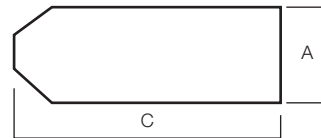
Maintenance

3M Cold Shrink EC-Series End Caps are stable under normal storage conditions. The end caps are not impaired by freezing or overheating due to ambient temperatures encountered during shipping or storage. Normal storage and stock rotation are recommended.

Product #	(mm)
EC-1	(11,6 - 20,9)
EC-2	(15,9 - 30,1)
EC-3	(26,0 - 49,2)
EC-4	(45,5 - 84,3)

SKE End Caps

- Provides a reliable method of sealing cables
- Easy installation
- Internal coating of adhesive for reliable environmental sealing
- Offers excellent electrical and mechanical protection
- For indoor and outdoor application



	Cable diameter (mm)	Diameter before shrinkage (mm)	Full recovered dimensions (mm)	
			A	C
SKE 4/10	4-8	10	4	33.5
SKE 8/20	8-16	20	8	55.3
SKE 15/40	15-32	40	15	90.0
SKE 25/63	25-51	63	25	143.3
SKE 30/76	30-61	76	30	158.0
SKE 45/100	45-80	100	45	162.5
SKE 61/158	61-126	158	61	182.0

Cable Cleaning Solvent CC Series

Product Description

CC series solvent is a colourless non-conducting liquid that emanates a light orange peel scent. It is compatible with all solid dielectric cable insulations, will not cause tracking on insulation surfaces and it evaporates completely. There are three solvent containing products within the CC series to meet cleaning needs as follows:

- CC-2 Cable Cleaning Preparation Kits are assembled with three solvent saturated cleaning pads in an aluminium lift top container. 120 grit, non-conducting abrasive is wrapped around the containers exterior to aid in cleaning cable insulation surfaces.

- CC-3 Cable Cleaning Pad Kits are assembled with three solvent saturated cleaning pads in a sealed plastic bag. Cleaning pads are easily accessed by cutting off one end of the bag.
- CC-4 Cable Cleaning Solvent is available in 0.946 liter size non-breakable plastic containers. Shaped for easy handling and pouring, containers have lift dispensing pour spouts to minimise spillage.

CC-2	Cable cleaning preparation kit
CC-3	Cable cleaning pad kit
CC-4	Cable cleaning solvent 0.95L

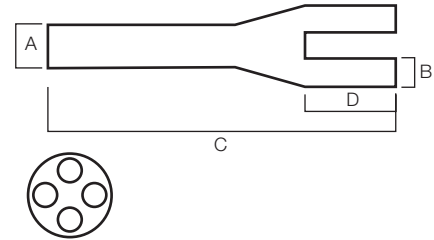
Constant Force Springs

- Range of solderless connectors for use on lead or aluminium sheaths and copper screened cables.
- Easily applied by rolling the spring onto the sheath connectors.
- Manufactured from surgical grade stainless steel.
- Continues to exert constant pressure.

Sizes	O.D (mm)	Sizes	O.D (mm)
Size 1	11.9-19.8	Size 4	25.4-56
Size 2	17-31.9	Size 5	38.4-74.5
Size 3	19.8-37.2	Size 6	45-106.9

SKE breakout boots

- Pre-moulded
- For insulation and sealing of cable crotches
- Offers excellent electrical and mechanical protection
- Resistant to a variety of corrosive fuels, fluids and chemicals
- Flame retardant
- Internal coating of adhesive for reliable environmental sealing
- For indoor and outdoor application



For 3-core cables

	Cross section for unscreened cables (mm ²)	Cable diameter (mm)	Expanded diameter (mm)		Recovered diameter (mm)			
			A	B	A	B	C	D
			SKE 3F / 1 + 1.5	1.5 - 16	11 - 19	25.0	9.0	9.0
SKE 3F / 2	16 - 50	18 - 28	31.0	15.0	18.0	5.0	90	25
SKE 3F / 4	50 - 150	23 - 50	55.8	30.4	22.5	9.0	180	44
SKE 3F / 5	150 - 400	39 - 65	110.0	40.0	35.0	17.5	178	38

For 4-core cables

	Cross section for unscreened cables (mm ²)	Cable diameter (mm)	Expanded diameter (mm)		Recovered diameter (mm)			
			A	B	A	B	C	D
			SKE 4F / 1 + 2	1.5 - 35	12 - 32	35.0	15.0	12.0
SKE 4F / 3 + 4	35 - 150	27 - 45	60.0	30.0	22.9	6.4	202	38.1
SKE 4F / 5	150 - 400	37 - 72	78.7	38.1	35.6	13.0	240	55.0



HEATSHRINKABLE PRODUCTS

Heatshrinkable Products

- Wide range of Heat Shrink tubes to insulate electrical cables and wires
- Simple insulation to heavy duty protection



3M™ FP-301 Thin-Wall Tubing

- High reliability
- Value for money
- Convenient
- Black and Colours

Thin-Wall Tubing Applications

3M FP-301 Tubing offers an outstanding balance of electrical, physical and chemical properties for a wide variety of industrial and military applications. Rated for 135°C continuous operation, all FP-301 Tubing is split resistant, mechanically tough, easily marked and resists cold flow.

Single wall tubing is typically used as an electrical insulation over cable splices and terminations. It is also used for phase identification, lightweight abrasion protection, lightweight wire harness covering, wire marking, wire bundling, component packaging and fire-resistant covering.

	Diameter before shrinkage (mm)	Diameter after shrinkage (mm)	Wall thickness full shrinkage (mm)	Length (m)
FP-301-3/64	1.2	0.6	0.4	30.0
FP-301-1/16	1.6	0.8	0.4	30.0
FP-301-3/32	2.4	1.2	0.5	30.0
FP-301-1/8	3.2	1.6	0.5	30.0
FP-301-3/16	4.8	2.4	0.5	30.0
FP-301-1/4	6.4	3.2	0.6	30.0
FP-301-3/8	9.6	4.7	0.6	30.0
FP-301-1/2	12.7	6.4	0.6	30.0
FP-301-3/4	19.1	9.5	0.8	15.0
FP301-1	25.4	12.7	0.9	15.0

FP-301 Assorted Kits

The Assorted Colour Kit has a total of 133 pieces and contains seven colours: black, red, white, yellow, blue, green and clear (see chart below). The black kit contains 102 pieces, all 512,4mm lengths (see chart below).

Assorted Colours Kit		Assorted Black Kit	
Kit contents	Kit Quantity	Kit contents	Kit Quantity
2.35mm	35	4.8mm	30
3.18mm	28	6.5mm	28
4.75mm	21	9.6mm	20
6.35mm	21	12.7mm	14
9.53mm	14	19.1mm	6
12.70mm	14	25.4mm	4

3M™ FP-221VW Thin Wall Tubing

- Excellent insulation and protection in various industrial applications
- Non-adhesive
- Length 1.2m
- Shrink Ratio 2:1
- 10 standard sizes - 5 colours
- Operating temp -55°C to 135°C
- UL Recognised, CSA Certified
- Temperatures to 300°C for short time
- Highly flame resistant
- Self-extinguishing - meets UL 224 VW-1
- SAE-AMS-DTL-23053/5 Class 3
- 1200mm lengths / spools
- Shrink Temperature 100°C
- Each tube is printed with Product No. size and approvals.

Specification & Ordering Information

Product Number	Black	Blue	Red	White	G/Y	Cable O.D
FP221VW 1.5/0.75	●	●	●	○		1.2-0.75mm
FP221VW 3.0/1.5	●	●	●	○	●	2.4-1.5 mm
FP221VW 5.0/2.5	●	●	●	○	●	4-2.5 mm
FP221VW 7.0/3.5	●	●	●	○	●	5.6-3.5 mm
FP221VW 10/5	●	●	●	○	●	8-5 mm
FP221VW 13/6.5	●	●	●	○	●	10.4-6.5 mm
FP221VW 20/10	●	●	●	○	●	16-10 mm
FP221VW 25/12.5	●	●	●	○	●	20-12.5 mm
FP221VW 40/20	●	●	●	○	●	32-20 mm
FP221VW 50/25	●	●	●	○	●	40-25 mm

3M™ IMCSN Medium-Wall Tubing

- Insulation and sealing of low voltage connectors
- Up to 1000 V
- Shrink Ratio 3:1
- Adhesive lined
- Also available without adhesive lining
- Abrasion resistant
- Self extinguishing
- SAE-AMS-DTL-23053/15, Class 2 (Mil Spec)
- 9 standard sizes
- Black available in all sizes
- Red on 0400 (10mm), 0800 (20mm), and 1100 (28mm) only
- 1200mm lengths
- Buried inside conduit, duct or junction box
- Length 1.2m



Medium-Wall Tubing Applications

3M IMCSN heat shrinkable medium-wall cable sleeves are reliable, tough performers made of split-resistant cross-linked polyolefin. Use for 1 KV splices, connections, terminations and rejacketing. They protect against mechanical and environmental dangers providing excellent abrasion, corrosion and chemical resistance. 3M IMCSN sleeves have greater flexibility than the ITCSN, our heavy-wall version. Installation of these fast-shrinking sleeves is easy with minimal training necessary.

Medium Duty Tubing is designed for use on above and below ground applications, provided it is enclosed in a junction box, duct or conduit. The wall thickness allows for some flexibility, the sealant forms a barrier against water, moisture, dirt and other environmental contaminants. It installs easily and has shrink ratios to accommodate effective insulating and sealing over large transitions, splices on LV, MV & HV and battery cables, connections in CATV wiring including splices, taps, amplifiers and splitters.

Product Number	Typical Cable Range	Expanded/Recovered I.D	Cable O.D
IMCSN-0400-48A	4-10 mm ²	10.2/3.8 mm	9mm to 3.3mm
IMCSN-0800-48A	10-25 mm ²	20.3/5.6 mm	18mm to 5.6mm
IMCSN-1100-48A	35-60 mm ²	27.9/9.4 mm	24mm to 9.4mm
IMCSN-1500-48A	60-120 mm ²	38.1/12.7 mm	33mm to 12.1mm
IMCSN-2000-48A	185-250 mm ²	50.8/19.1 mm	44.5mm to 19mm

3M™ ITCSN Heavy-Wall Tubing

- Heavy duty applications
- Insulation and sealing of low voltage cables
- Up to 1000 V
- Shrink Ratio 3:1
- Adhesive lined
- Also available without adhesive lining on special order
- Abrasion resistant
- Self extinguishing
- SAE-AMS-DTL-23053/15, Class 2 (Mil Spec)
- 10 standard sizes
- Black available in all sizes
- Red on 0300 (7.5mm), 0400 (10mm), 0800 (20mm), 1100 (28mm) only
- 1200mm lengths
- Direct Bury Standard approval is to UL486D – and must be written on Heavy Wall Shrink



Heavy-Wall Tubing Applications

Heavy Duty Tubing is designed for use on above and below ground, applications it can be direct buried in the ground or enclosed in a junction box, duct or conduit. The extra wall thickness gives it excellent mechanical and environmental protection, very good abrasion protection and less flexibility than medium wall. The sealant forms a barrier against water, moisture, dirt and other environmental contaminants. It installs easily and has shrink ratios to accommodate effective insulating and sealing over large transitions, splices on LV, MV & HV and battery cables, connections in CATV wiring including splices, taps, amplifiers and splitters.

Product Number	Typical Cable Range	Expanded/Recovered I.D	Cable O.D
ITCSN-0400-48	4-10 mm ²	10.2/3.8 mm	9mm to 3.3mm
ITCSN-0800-48	10-50 mm ²	20.3/5.1 mm	18mm to 5.6mm
ITCSN-1100-48	35-95 mm ²	27.9/9.4 mm	24mm to 9.4mm
ITCSN-1500-48	95-185 mm ²	38.1/12.7 mm	33mm to 12.1mm
ITCSN-2000-48	150-300 mm ²	50.8/16.5 mm	44.5mm to 19.0mm

3M™ HDCW Wraparound Heat Shrink Cable Repair Sleeves

- Wrap-around with adhesive
- Maximum protection against mechanical stress
- No open cable needed
- Good bonding to PE and PVC surfaces
- Forms a perfect seal to prevent moisture

Features and Benefits

- Quick and easy installation
 - Maximum protection against mechanical stress
 - Good bonding cable jacket materials Qualified to ANSI C119.1
 - For insulation on low voltage cable up to 1000V and for jacket repair on cable up to 35kV
 - Excellent performance in harsh environmental conditions
 - Hot melt adhesive forms a durable, moisture resistant seal
- 3M HDCW is made from modified cross-linked polyolefin, with a hot-melt adhesive liner on the inner side of the sleeve. Upon heating, the sleeve shrinks and the adhesive melts, creating a water-tight bond between the sleeve and the

cable. HDCW Wraparound Cable Repair Sleeves meet ANSI C119.1 requirements. A corrosion proof metal channel is used to close the sleeve during installation.

Application

3M HDCW Wraparound Heat Shrink Cable Repair Sleeves are designed to quickly repair damaged cable jacketing. They may also be used to re-jacket in-line splices. HDCW wrap sleeves can be used as insulation material on cable and splices up to 1000 volts and as jacket repair material on cable up to 35kV. The design of the wrap sleeve allows it to be installed in tight spaces with ordinary heating equipment such as a torch.

	Diameter before shrinkage	Diameter after shrinkage	Length
HDCW 35/10	50mm	8mm	250mm
HDCW 55/15	75mm	13mm	500mm
HDCW 80/25	100mm	23mm	500mm
HDCW 110/30	132mm	25mm	500mm
HDCW 140/40	145mm	32mm	750mm

Other Heat Shrink Products

Other 3M™ Heat Shrinks Available

- 3M Flexible Polyolefin Tubing
EPS 200, EPS 300 & EPS 400 (Thin wall adhesive lined)
- BBI (Bus Bar Insulation)
- KYNAR®
- 3M™ TP Semi-rigid Polyolefin
- NST
- VTN-200
- PSTH Elastomeric Polyester

Special purpose tubing offers extremely high performance for aircraft/ aerospace, and military applications. They are tough and highly resistant to chemicals, hydraulic or petroleum fluids, and extreme temperatures. They are ideally suited for jacketing cable harnesses and custom-made cable, wiring and fuse marking, and covers for electronic control systems. BBI is designed for insulating rectangular, square, and round bus bar rated from 5kV-35kV. HDCW is excellent for cable repairs in Mining and Industrial situations where cables cannot be cut or disconnected.





COMMUNICATION PRODUCTS

Copper Solutions

Volition™ RJ45 K5E Jack, RJ45 K6 Jack

The 3M Volition K5E, K6 Jacks are a unique and simple Cat. 5e Cat. 6 hardware component (TIA/EIA-568 B 2 and ISO/IEC 11801 2nd Edition), utilising the universally accepted keystone mounting. They offer a quick and reliable connection as the eight copper conductors are effortlessly terminated in a single operation without tools.

The jacks are the core product of 3M's Cat. 5e and Cat. 6 copper structured cable solution, offering superior performance over Cat. 5e/Cat. 6 link standards.



Product Number	Description
VOL-0CK5E-U-X*	RJ45 Cat. 5e K5E Jack UTP Tool-less *X denotes colour. W=White, BU=Blue, G=Green, R=Red, Y=Yellow, BL=Black.
VOL-0CK6-U-X*	RJ45 Cat. 6 K6 Jack UTP Tool-less *X denotes colour. W=White, BU=Blue, G=Green, R=Red, Y=Yellow, BL=Black.

Volition™ Patch Panels

As part of the 3M Volition Category 6 portfolio, we offer modular unloaded Patch Panels for use with the K6 RJ45 Jack or traditional punch-down termination style Patch Panels.



Keystone Patch Panel

The lowest cost option Patch Panel without tray, to be used in racks with integral cable management. Available in 16 and 24 port, black.

Product Number	Description
VOL-PPCB-F24K	RJ45 Patch Panel Classic, Black Aluminium for Keystone Jacks unloaded
VOL-PPUD-FX*K	RJ45 Patch Panel UTP Economic for Keystone Jacks *X denotes number of keystone jacks, 16 or 24

Patch Panel - 110 style

The 3M Volition 110 style patch panel is available in 24-port (1U) and features easy to use write-on labels for port labelling.

Product Number	Description
VOL-PP5E24B	Patch Panel Cat. 5e 110 Contact UTP 568A/B 24 Port, Black
VOL-PP6E24B	Patch Panel Cat. 6 110 Contact UTP 568A/B 24 Port, Black

Product Number	Description	Colour
P33410AA	1U Cable management panel (plastic guides)	Black
AE010425302	Bezel for keystone clipsal face plate	White

Volition™ Cat 6 Patch Cords

Part of the 3M copper enterprise portfolio, 3M Volition Cat. 6 Patch Cords allow you to complete your Cat. 6 EIA/TIA system. They will give you a fully backward compatible structured cabling system.

Designed to exceed Category 6 requirements, the Volition patch cords optimise the performance when used in the Volition Cat. 6 solution. The RJ45 patch cord range includes UTP PVC versions available in 1, 2, 3 and 5 m.



Features

- Category 6 performance
- Moulded boot for better mechanical protection
- 4 pairs of flexible multi-stranded copper conductors

Product Number	Description
VOL-6EUP-L1	RJ45 Cat 6 UTP Patchcord, 1.2m
VOL-6EUP-L2	RJ45 Cat 6 UTP Patchcord, 2.1m
VOL-6EUP-L3	RJ45 Cat 6 UTP Patchcord, 3.0m
VOL-6EUP-L5	RJ45 Cat 6 UTP Patchcord, 5.0m

Volition™ Indoor Boxes and Frames

Product Number	Description
QDB-20A	Surface Mount Box - 20 Pair
QDB-30A	Surface Mount Box - 30 Pair
QDB-60A	Surface Mount Box - 60 Pair
QDB-100A	Surface Mount Box - 100 Pair
QPB-10	Internal/External Equipped Box - 10 pair



Volition™ RCP Modules

Designed for high output applications, the RCP 2000 range offers a wide choice of modules:

- shielded or unshielded
- rear (for automatic software acquisition, in particular) or side cabling, available in different capacities (8 or 6 pairs) and different colours according to the planned use.

RCP Category 6 Patch by Exception System

3M offers a complete punch down system for voice and data cross-connect applications. The new RCP Category 6 is the “next generation” of cross-connect and the latest 3M innovation in a broad line of solutions for high speed data networks. The RCP cross-connect system uses a simple modular approach with a few basic components such as 8-pairs cross-connect modules, back-mount frames and management accessories. The new cross-connect RCP Category 6 offers an outstanding connecting block performance.

RCP Modules

	RCP - Side Cabling Modules (for solid and multi-stranded wires)
P46920CE	Disconnection module, Category 6, 8P, UTP, with 2 wire guide channels (side cabling)
P46840CE	Disconnection module, Category 6, 8P, yellow, UTP, with 2 wire guide channels (side cabling)
P46839CE	Disconnection module, Category 6, 8P, green, UTP, with 2 wire guide channels (side cabling)
P46809CE	Disconnection module, Category 6, 8P, red, UTP, with 2 wire guide channels (side cabling)
P46734CE	Disconnection module, Category 6, 8P, ivory, UTP, with 2 wire guide channels (side cabling)
C234037A	IDC termination tool for RCP modules



Fibre Solutions

Hot Melt Connectivity

- Quick, simple and safe assembly in the field
- Connector, adhesive and polishing film from one manufacturer guarantee high quality
- Simple polishing process, manually or polishing unit
- All connectors contain a Zirconia ferrule and Hot Melt adhesive
- Anti-bend design boot available in various colours for definite channel separation
- Suitable for all LAN and CATV applications
- Suitable for external applications



Product Number	Description
6100-W	ST Multi-mode Boot Connector, white
6100-B	ST Multi-mode Boot Connector, black
6300-W	SC Multi-mode Boot Connector, white
6300-B	SC Multi-mode Boot Connector, black
8100-YS	ST Single-mode Boot Connector, yellow
8300	SC Single-mode Boot Connector, white



3M Couplings

Product Number	Description
6313	SC Multi-Mode Standard Duplex coupling
8119	ST Single-mode coupling
8310-G	SC Single-mode coupling, green

Hot Melt Kits and Accessories - Hot Melt Universal Kit

Hot Melt Termination Kits contain all materials necessary to terminate 3M™ SC, ST, and FC Hot Melt and Ultra High Temp Hot Melt Connectors.

Product Number	Description
6361	Universal Hot Melt Kit

3M™ Fibrlok™ Mechanical Splicing System

- Fibrlok™ for both 250 to 900 μm coating
- For Singlemode and Multimode fibres
- Identical stripping lengths for 250/900 μm fibres
- Repositioning of fibres is possible

Product Number	Description
2501	Fibrlok™ Assembly Tool
2529	Universal Optical Fibre Connector (250 x 900)

Fibre Patch Leads

A full range of 3M epoxy, epoxyless and hot melt connectors in FC, SC and ST configurations follows tight design and manufacturing tolerances for a wide range of uses.

Product Number	Description
XS003808184	SC Patch Lead MM Duplex, 1m
XS003811022	SC Patch Lead MM Duplex, 2m
XS003810628	SC Patch Lead MM Duplex, 3m

Outside Plant Solutions

Scotchcast™ 4415

The Scotchcast 4415 Filled Cable Cleaning Kit is designed to remove the filling compound from fibre optic and copper cables. All of the cleaning materials are provided in a single package.

Kit Contents:

- 10 Solvent Saturated pads
- 10 Towels.

Scotchcast™ 4416

The Scotchcast 4416 Duct Sealing Kit prevents water and gas from entering a manhole or C.O. through a cable duct. Each kit contains enough material to plug 4 ducts.

Kit Contents:

- 11 Foam Strip 25mm x 76mm x 1829mm
- 4 Scotchcast Filled Cable Cleaner
- 4 Plastic Tubes 305mm long
- 4 Bags of Scotchcast™ Expandable Sealant
- 1 Spacer Web Strip 51mm x 254mm



High Gel Re-enterable Encapsulant 8882

High Gel - a completely re-enterable encapsulant designed for superior performance at a low cost. Using an advanced compound technology, High Gel yields a higher level of adhesion than encapsulants costing much more. This is because High Gel is designed to absorb cable-filling materials, yet remain easily and completely re-enterable.

No cable cleaning is required, even when splicing filled cable. Contains no isocyanates. It provides better penetration of splice bundles at low temperatures due to its lower viscosity and longer gel time.



Features	Advantages
Advanced compound technology	Does not contain isocyanates
High adhesion	Greater moisture protection; no cable cleaning required
High performance	Easy to re-enter; prevents ingress of moisture
Low cost	More economical than most comparable products
Unipak Packaging	Eliminates worker exposure to vapours during mixing. Virtually all material is used.

Product Number	Sizes
8882-A	Size A (90ml)
8882-C	Size C (385ml)
8882-D	Size D (659ml)

Test and Measurement

Dynatel Cable/Pipe/Fault Locators

A complete system for damage prevention, locating, marking and mapping vital underground assets.

The full line of 3M locators and markers helps you quickly and accurately identify underground assets. From finding the exact path and estimated depth of underground utilities, to locating buried passive markers, to reading and writing information directly to the new markers, 3M offers the precision tools needed to manage your assets. And now, certain 3M Dynatel Locators interface with select GPS/GIS field mapping instruments. Together, these tools provide a complete locating and marking solution with the performance and reliability you trust from 3M.

	Cable/Pipe	Cable/Pipe/Fault	Marker Locator
M Series Advanced locator	Model 2250M	Model 2273M	N/A
M-iD Series Advanced locator reads/writes to active EMS markers GPS compatible	Model 2250-iD	Model 2273M-iD	Model 2250M-iD Model 2273M-iD
2200 Series Basic locator	Model 2250 Model 2210	Model 2273	Model 2205 Model 2206
1420-iD Reads/writes to active EMS markers GPS compatible	N/A	N/A	Model 1420-iD

Cable/Pipe Locator 2250M

Cable/Pipe/Fault Locator 2273M

For cable path locating, the Dynatel cable/pipe locator M series has a highly accurate multi-antenna design for various user-selected locating modes - Directional Peak, Multi-Directional Null, plus an ultra-sensitive Special Peak mode for extreme depths. They come equipped with several built-in features that allow accurate cable and pipe locating. For fault locating, the Dynatel locator 2273M performs all the functions of the 2250M plus the ability to find underground faults.

Dynatel Locators M-iD Series

Cable/Pipe/Marker Locator 2250M-iD

Cable/Pipe, Fault/Marker Locator 2273M-iD

Our most advanced locator series, M-iD locators are engineered with the same cable/pipe locating platform as the M series but with the added ability to locate active and passive electronic markers. Even in the heaviest of traffic, these locators indicate whether a properly installed marker is for power, gas, water, wastewater, CATV or telephone utilities.

In addition, the M-iD series features the ability to write, read and lock programmed information into the 3M Electronic Marker System iD Ball Markers 1400 Series, an exclusive feature. Information such as a pre-programmed unique identification number, facility data, application type, placement date and other details from up to 100 iD markers can be stored with a date/time stamp. It can then be transmitted to a PC through a standard RS232 port.

**Dynatel Locators 2200 Series
(Cable/Pipe Locator 2250
Cable/Pipe, Fault Locator 2273)**

The 2200 series locator is built specifically to find the path and estimated depth of buried cables and pipes. 2200 series locators have four active frequencies, passive frequencies for power, cathodic protection, CATV and auxiliary frequencies for long distance locating from remote transmitters. They also offer toning of aerial cable, direct readout of active duct probe, and cable/pair identification.

Dynatel Locators 2210 Series

The 2210 locator was developed specifically to pinpoint the path of underground cables and conductors. With the push of a button, the 2210 locator quickly and accurately measures relative signal current in the target cable with a direct readout of cable depth. The 2210 locator operates using two different active frequencies and incorporates an improved peak-locating mode which provides a sharp peak response, allowing easy discrimination between adjacent cables.

GPS System Enhances Field Efficiency

3M breaks new ground with GPS/GIS technology. The M-iD series and 1420-iD locators now interface with select GPS/GIS field mapping instruments for real-time mapping of marker placement. This integrated solution simplifies the mapping process so that a single button on the locator interface remotely transfers data to GPS/GIS devices to map electronic upload of this information in industry-standard GIS formats provides a paperless system for facility records updating.

Software Interface from Receiver to PC.

The 3M Dynatel PC Locator Tools Software (included with each of the M series and M-iD series locator) provides a user-friendly interface between the receiver and a PC.

This software utility allows customisation of the receiver for specific applications as well as software update/revision. The marker utility can be used to create templates for programming 3M Electronic Marker System iD Ball Markers. It also downloads marker data that has been programmed and/or read by the receiver into the PC for documentation databases.



Electronic Marker Systems (EMS)

As communities grow, so do their underground assets. It becomes increasingly important to quickly and accurately identify exactly what is buried underground and where. The 3M Electronic Marker System (EMS) delivers more information to accelerate identification and help avoid costly mistakes.

Ball Marker

Engineered for narrow trench applications up to 1.5m in depth, the 10cm-diameter ball marker has a unique, patented self-leveling feature that ensures an accurate, horizontal position regardless of how it is placed in the ground.

Near-Surface Marker

The near-surface marker is ideal for marking underground and street-access facilities up to 0.6m in depth. Its 8.9cm length, cylindrical size and shape allows for easy installation in asphalt, concrete or rock without extensive digging or drilling.

Mini-Marker

Designed for making applications at depths up to 1.8m, marker spokes in the 8.25" diameter mini-marker help stabilise it in the correct position after placement.

Full Range Marker

The full-range marker is suited for deep applications up to 2.4m. Its 38cm diameter makes it ideal for use as a digging shield over sensitive underground facilities.

Applications

Telephone	CATV	Power	Water	Wastewater	Gas
<ul style="list-style-type: none"> • Cable paths • Splices • Buried service drops • Load coils • Conduit stubs • Fibre optic facilities • Branch splices 	<ul style="list-style-type: none"> • Cable paths • Fibre optic facilities • Buried service drops • Road crossings • Buried splices 	<ul style="list-style-type: none"> • Cable paths • Service drops • Conduit slabs • Buried splices • Road crossings • Branch splices • Buried transformers 	<ul style="list-style-type: none"> • Pipeline paths • Service stubs • Clean-outs • Road crossings 	<ul style="list-style-type: none"> • Pipeline paths • Service stubs • PVC pipeline • Buried valves • Road crossings • Tees 	<ul style="list-style-type: none"> • Pipeline buried • Min stubs • Service stubs • Tees • Road crossings • Valve boxes • Metre boxes

Specifications

	Telephone	Power	CATV	General Purpose	Water	Wastewater	Gas	Read Range *
Colour	Orange	Red	Black/orange	Purple	Blue	Green	Yellow	
ACTIVE EMS iD Ball Marker Product Number	1421-XR/iD	1422-XR/iD	1427-XR/iD	1428-XR/iD	1423-XR/iD	1424-XR/iD	1425-XR/iD	1.5m
PASSIVE Ball Marker Extended Range Product Number	1401-XR	1402-XR	1407-XR	1408	1403-XR	1404-XR	1405-XR	1.5m
Near-Surface Marker Product Number	1432	1433	N/A	N/A	1434	1435	1436	0.6m
Mini-Marker Product Number	1255	1256	N/A	N/A	1257	1258	1259	1.8m
Full-Range Product Number	1250	1251	N/A	N/A	1252	1253	1254	2.4m

Electronic Marker System iD Ball Markers 1400 Series

1400 series iD ball markers can be programmed to include customer-specific information such as facility data, type of application, material type and size, placement date and other important details. iD markers come programmed with a unique identification number, which is also attached to the marker on a removable bar-coded tag for future reference. Additional information can be programmed and locked by the user via the 1420-iD or M-iD series locators.





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