



3M Science.
Applied to Life.™

Mining Solutions

Electrical Markets Division

About 3M Electrical Markets Division

3M originated as a mining company in 1902 and now proudly supports the industry with our innovative technology, products and service. Our primary products are used to bolster your electrical cabling network, including insulating, protecting, connecting, splicing, and terminating of power cables as well as a number of other applications.

Support from Start to Finish

Whether you are in the midst of a new project or maintaining operations, we are with you every step of the way. Maintaining electrical power is critical in a mining operation, and the cost of downtime extreme.

What you get with us?

Trusted Products

Your reputation depends on reliability. That's why we're committed to providing you with proven, reliable electrical solutions.

Technical Salesforce

You need products that meet your specific requirements. Our technically trained salesforce will help you make an educated decision.

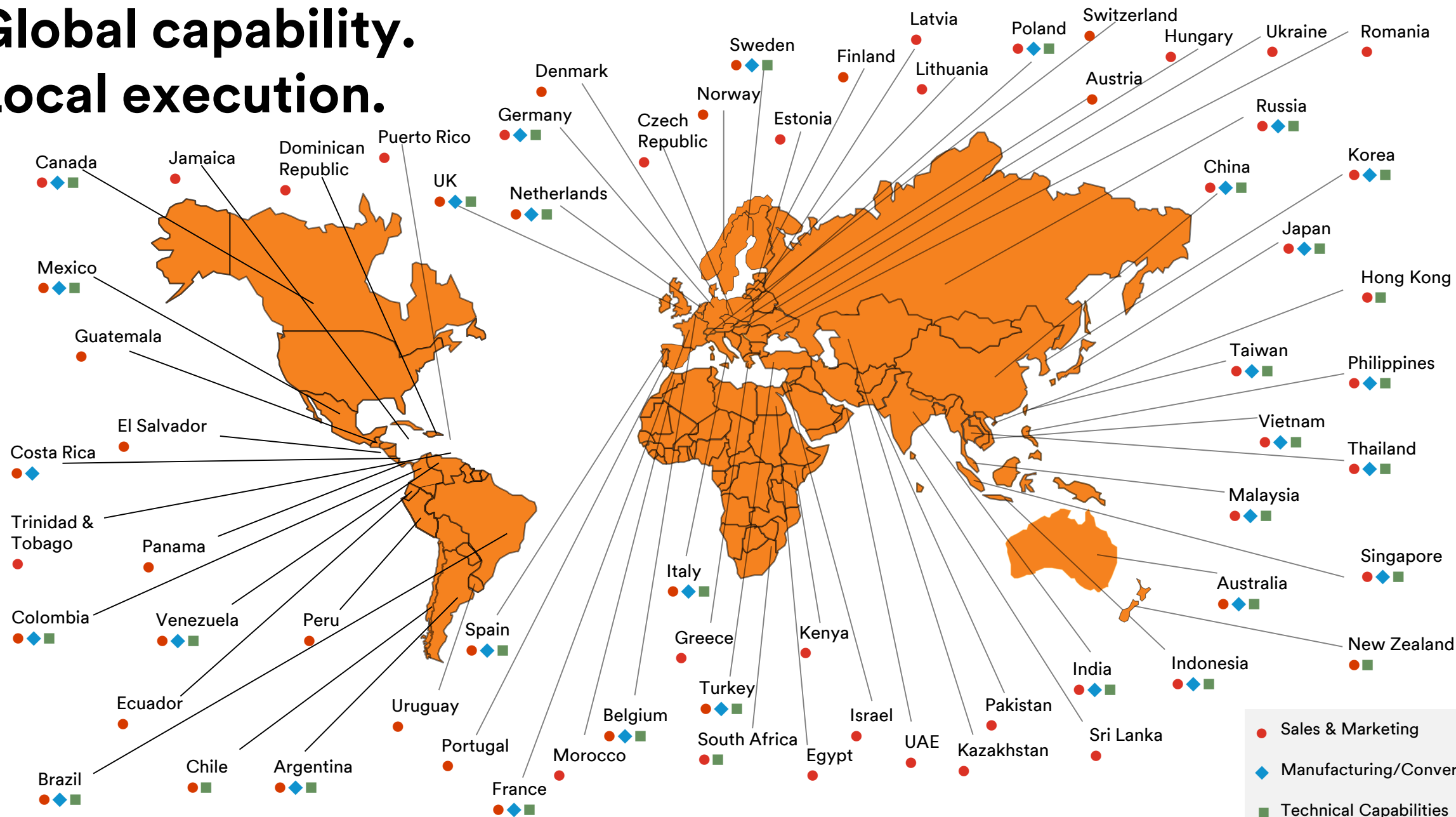
Hands-On Training

Our team of application engineers and sales specialists are available to tackle your challenges and assist with installation training.

70+ years of industry experience.
70 international subsidiaries.
Operations in 200+ countries.

Expert support where you need it.
When you need it.

Global capability. Local execution.



Delivering efficient, reliable, and sustainable energy

We offer high quality solutions to assist in the construction, maintenance, repair and operations in these high demand environments. Below are the primary mines types where we are present and what equipment our products support.

Surface and Underground Mines - *There are over 13,000 active mines, focusing on extraction of metals, coal, gemstones, potash, stone and other minerals.*

Open Pit Mining



Strip Mining



Mountain Top Removal



Underground Soft Rock



Underground Hard Rock



What our products support

Power Distribution

Substations, Overhead Distribution, Mobile Power Centers



Processing and Support Systems

Conveyor Equipment, Processing Centers, Ventilation Fans, Pumps, Etc.



Mobile Equipment

Blast Hole Drills, Hydraulic Shoves, Excavators, Spreaders, Continuous Miners, Underground Drill, Roof Bolter, Shuttles / Buggies and Scoops.



3M™ Electrical Applications and Products

Terminate Medium Voltage Cables (1 kV- 46kV)

Cold Shrink Indoor Term.



Splice Low and Medium Voltage Cables (600V-46kV)

Cold Shrink or Resin Splice



Terminate and Join High Voltage Cables (69-72.5kV)

Cold Shrink Splices



Repair and Replace Damaged Cable Jackets

Resins or Heat Shrink



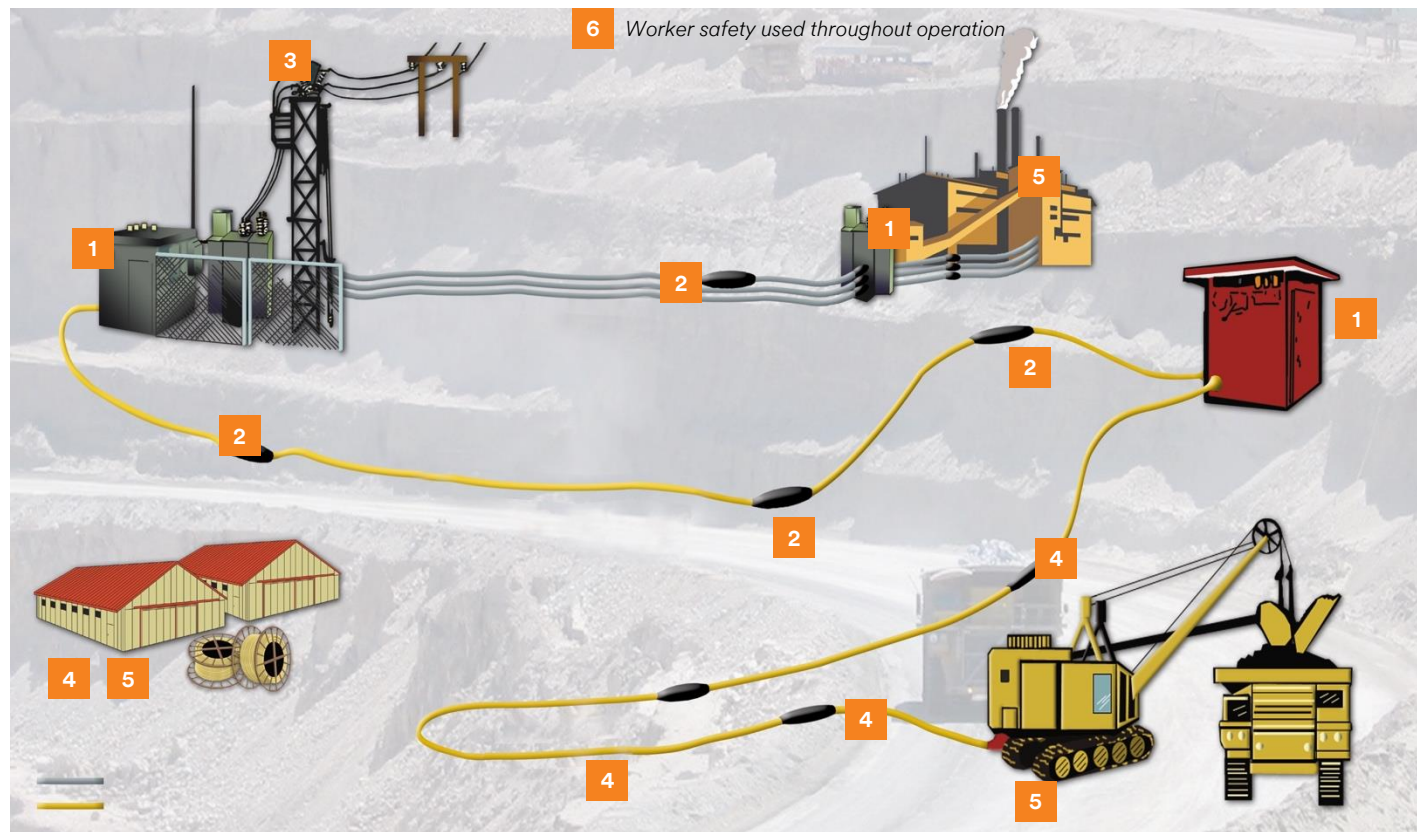
Motors and Equipment Maintenance

Aerosols, Terminals, Etc.



Worker Safety

Fall Protection



What sets our products apart?

3M™ Cold Shrink Terminations and Splices

- Individually constructed for proven long-term reliability and safe operation at overload temperatures.
- Light weight and no torch or hot permit required.
- Offer reduced installation time vs. heat shrink, taping or resins.
- “Living Seal” meaning it expands and contracts with cable .
- Terminations include Hi-K capacitive stress control, which provides lower surface stress and improved track resistance. It is more reliable than geometric stress control offered by competitors. [\(3M Study\)](#)

[Why Cold Shrink Technology? Video Here](#)

3M™ Electrical Tapes

- Global Leader and Inventor of Vinyl Electrical Tape.
- Field proven reliability with higher and lower operating temperatures*
- Vast portfolio of Vinyl, Rubber, Mastic, Specialty Tapes for numerous applications.

[3M™ Vinyl Electrical Tensile Strength. Video Here](#)

3M™ Scotchcast™ Resins

- Expansive portfolio of splicing, sealing, and jacket repair options.
- Molds for Inline, Y connection, parallel clamp, tap, and irregular shapes
- Insulation up to 15kV for select kits.
- Fully submersible and abrasion resistant compared to tapes, heat shrink, and cold shrink options

Terminate Medium Voltage Cables (1kv-46kv)

3M™ Cold Shrink Terminations are robust in design and fast to install. We'll help you specify the right product, train your teams how to install, and we offer customized kitting and schedule shipments to meet your demands.

Outdoor Termination



Indoor w/t Breakout Kit



Load Break Elbow



Application For MV Cable Termination:

- 3M™ Cold Shrink QTIII / QTII Terminations are used to safely and reliably deliver power at site locations:
 - Overhead distribution pole drops
 - Substations
 - Mobile Power Centers above and below ground
 - Connection boxes or transformers
- 3M™ Separable Elbows 200amp Load Break and 600amp Dead Break at transformer locations.
- 3M™ Shearbolt lugs provide flexibility when joining differing conductor ranges, eliminating need for compression dies, and reduce installation time.
- 3M™ Break-Out Kits offer flexibility to use single conductor terminations on 3C Cable.

QTIII / QT II Terminations



Crimp and Shearbolt Connectors



Breakout Kits



Separables



3M™ Termination Kits:

Please consult your 3M Sales Specialist for proper kitting recommendations

- 3M™ Cold Shrink QTIII / QTII Termination Kits (≤46kV)
- 3M™ MV Separable Connectors (≤35kV)
- 3M™ Compression and Shearbolt Connectors
- 3M™ Cold Shrink 3C Breakout Kits

Splice Medium and Low Voltage Cables (600V-46kV)

3M™ Cold Shrink, Tape and Resin Splices offer different advantages that cater to your unique application. Choose the best splicing options to meet your application, time and budget.

Cold Shrink Splices



Tape Splices



Resin Splices



Application of Medium & Low Voltage Splices:

- MV&LV Splices (600V-46kV) are used to join a variety of mining cable types during installation or maintenance. Primary locations and equipment include:
 - Cable runs from substation to processing operation.
 - Cable runs from substation to mobile power centers above or below ground.
 - Cable runs to power mobile equipment (drills, excavators, shovels, spreaders, continuous miners, shuttles, etc.).
 - Cable runs to low voltage systems (conveyors, ventilation, pumps, lighting, etc.).

QSIII /QSII MV (5 kV-45kV)
Splice Kits



Mining Tape
Splice Kits
(600V-15kV)



Cold Shrink Splice
Kits(1 kV-8kV)



3M™ Scotchcast™
Mining Splice Kits
(600v – 15kV)



3M™ Compression
and Shearbolt
Connectors
(≤35kV)



Cold Shrink Splices:

- 3M™ QS3 Splicing Kits (5kV-46kV)
- 3M™ Cold Shrink Mine & Portable Cable Splice Kit 8043-1 (5kV-8kV)

Tape Splices:

- 3M™ Mining Cable Splice Kits 3100 Series (600V-15kV)
- 3M™ Electrical Tapes for splicing (600V-69kV)

Resin Splices:

- 3M™ Scotchcast™ Mine & Portable Cable Splice kits 8096 Series (5,8,15kV)
- 3M™ Scotchcast™ Resin Splice Kits (≤5kV)

Terminate and Splice High Voltage Cables (69kV-72.5kV)

3M™ Cold Shrink QTIII / QSIII High Voltage Termination & Joint Kits are lightweight, have a compact design, and are fast to install. They are designed to help provide save you time and money.

69kV Overhead Drop at Transmission Pole



69kV Joint for Direct Bury



QTIII HV (69-72.5kV)
Termination Kit



QSIII HV (69-72.5kV)
Joint Kit



Shearbolt Connectors



Application For HV Cable Termination & Joint Kit:

- 3M™ QTIII & QSIII HV Kits are primarily used for high voltage distribution and transmission at a mine site.
 - Overhead terminations at transmission poles
 - Primary and alternate substations at site
 - HV distribution connections at or below ground level

3M™ High Voltage Termination Kits:

Please consult your 3M Sales Specialist for proper kitting recommendations

- 3M™ Cold Shrink QTIII Termination Kit 7673-S Series (for 69/72.5kV)
 - Compatible with cable 250-2000 kcmil and solid dielectric insulations
 - Meets or Exceeds IEEE 48 Class 1 and IEC 60849

3M™ High Voltage Cable Joint Kits:

- 3M™ Cold Shrink QSIII Joint Kit 5488A Series (for 69/72.5kV)
 - Compatible with cable 25-2000 kcmil
 - Meets or Exceeds IEEE 404 & IEC 60840

Repair and Replace Damaged Cable Jackets

Cable jacket damage can lead to an electrical outage and costly downtime. 3M provides a variety of reliable solutions to protect your cabling network and keep your operation running.

Jacket Repair with Tape



Cable Jacket Repair with Resin



Cable Jacket Repair with Heat Shrink



Application of Cable Jacket Repair Solutions:

- 3M™ Electrical Tapes are used to repair all cable jacket types damaged in operation. We have a full line for re-insulating, providing abrasion resistance, waterproofing, and offering heat and corrosion resistance.
- 3M™ Scotchcast™ Resins are recommended used when cable is exposed extreme abrasion or fully submersed.
- Heat shrink offers a mix of durability and speed for jacket repairs.

**If cable jacket is damaged beyond the cable jacket, refer to 3M splicing options or consult your 3M sales specialists.*

3M™ Electrical Tapes



3M™ Scotchcast™ Jacket Repair Kits M Series



HDCW Wraparound Heat Shrink Cable Repair Sleeves



Cable Jacket Repair & Replacement Products:

- 3M™ Electrical Tapes
 - Scotch® Vinyl Electrical Tape Super 88
 - 3M™ Temflex™ Vinyl Electrical Tape 1700P (MSHA)
 - Scotch® Rubber Insulating Tape 130C
 - Scotch® Heavy Duty Mining Tape 31 (MSHA)
 - Scotch® Rubber Mastic Tape 2228
- 3M™ Scotchcast™ Jacket Repair Kits M Series
- HDCW Wraparound Heat Shrink Cable Sleeves

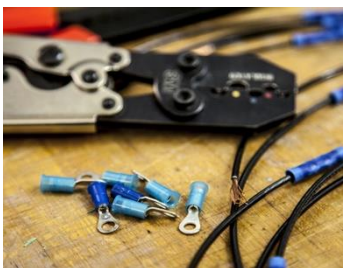
Motors and Equipment Maintenance

3M offers a number of electrical supply options for your motors, equipment and instrumentation needs.

Insulate Motor Leads



Repair Broken Connections



Manage Wires & Cable



Clean, Lubricate, Insulate



Application of Motors & Equipment Maintenance:

- Motors receive regular maintenance and need to be disconnected for service.
- Motor locations include:
 - Extraction (equipment, lifts, conveyors, ventilation, pumps, lighting, etc.)
 - Processing (crusher, ball mill, concentrator, separator, washer, refining, roasting, etc.)

Motor Lead Boots

1kv Pigtail

5kv Pigtail



5kv Inline



Terminals, Connectors



Cable Ties, Wire ID



Aerosols, Coatings



Motor Lead Connection Products:

- 3M™ Motor Lead Splice Kits ($\leq 1\text{kV}$, 5 & 8kV)
 - Pigtail & inline for non-shielded to 1kV
 - Pigtail for non-shielded 5 & 8kV
 - Pigtail for shielded up to 5 & 8kV
 - Inline for shielded up to 5 & 8kV
 - Pigtail & V-Stub up to 5 & 8kV
- 3M™ Wire Terminals
- 3M™ Wire Connectors
- 3M™ Cable Ties, Bases, and Stackers
- 3M™ Wire Marking Products
- 3M™ Electrical Tapes
- 3M™ Lubricants, Aerosols, and Coatings

Worker Personal Protection

Employee safety is of absolute importance at a work site. At 3M our role is to support you with the right resources to help keep your workers safe and get the job done.

Head Protection



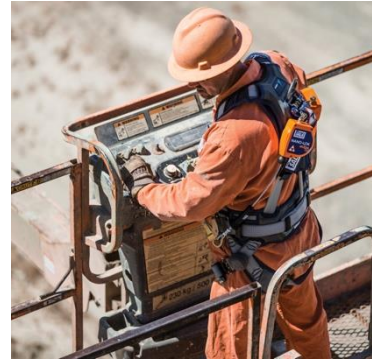
Hard Hat w/t Head Lamp



Hard Hat w/t Headset



Fall Protection



Harness



Lifeline



Eye and Ear Protection



Anti-Fog Goggles



Disposable Earplugs



Respiratory Protection



Disposable



Half / Full Face



Head Protection:

3M™ Hard Hat Protection Products

- 3M™ Securefit™ X5000 Hard Hats
- 3M™ Hard Hat H-700
- 3M™ Hard Hat H-800

Fall Protection:

3M™ Fall Protection Gear

Recommended Products:

3M™ Eye Protection Products

- 3M™ Securefit™ Glasses
- 3M™ GoggleGear™ Goggles

3M™ Ear Protection Products

- 3M™ Earmuffs
- 3M™ Disposable Foam Ear Plugs

3M™ Respiratory Protection Products

Ask about these additional solutions from 3M

Locating and Marking



Fire Barrier Protection



3M™ Locating & Marking Products:

- The Electronic Marker System helps save time and money by enabling crews to quickly pinpoint the location of buried assets including cable runs, splices, vaults, road crossings, etc.
 - [3M™ Dynatel™ Locating Systems](#)
 - [3M™ Electronic Marker System](#)

3M™ Fire Stopping Products:

- With our knowledge of fire detection, containment and suppression, 3M can help create preventative and affordable fire stopping solutions for your mining operation

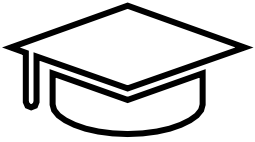
Electrician Hand Protection:

- Protect your hands with 3M™ comfort grip, cut resistant, or gripping material gloves.

Electrician Hand Protection



Additional Resources



Energy Academy

Take expert-led, online electrical training anytime, anywhere 24x7.

[Sign Up Today](#)



3M Electrical App

View our full product portfolio, create shareable project lists, and more with our 3M Electrical App.

Available on:



[Learn More](#)

[Also visit us at 3M.com/Electrical](https://www.3m.com/Electrical)

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Important Notice

Before using any of these products, you must evaluate them and determine if they are suitable for your intended application. You assume all risks and liability associated with such use.

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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 direct, indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.



Caution: Working around energized electrical systems may cause serious injury or death. Installation should be performed by personnel familiar with good safety practice in handling electrical equipment. De-energize and ground all electrical systems before installing product.