



# INSTALLATION & APPLICATION GUIDE

**MEGA MC™ Cable**

**RISER MC™ High  
Rise Cable**

**PVC Jacketed  
Feeder MC Cable**



# PURPOSE OF THIS GUIDE

This guide provides engineers and contractors with essential information on the basic applications, selection, and installation of MC feeder cables including MEGA MC™ cable, Riser MC™ High Rise cable, and PVC Jacketed Feeder MC cable. Southwire can provide additional support and/or consulting services for specific applications.

Electrical contractors have used smaller MC cables for branch circuits for many years. The industry is now using more large MC feeder cable. These large cables offer the owners and contractor the same advantages as found with the smaller MC cable branch circuits, and are now being used in most types of commercial construction, including apartments, condominiums, hotels, stadiums and office buildings.

MC feeder cables provide a neat and orderly appearance, alternative to pipe and wire. This guide should address most concerns about handling and installing these large MC feeder cables.



## MC CABLE ADVANTAGE

Using Type MC cable, contractors can install multiple conductors with professional-looking, owner-satisfying appearance in less time than it takes to hang empty conduit.

Feeder MC cables can include up to five conductors plus a ground wire in wire sizes up to 1000 kcmil in a tough, flexible aluminum armor. MC cable puts an entire 600 volt feeder circuit into a single, rapid-installation assembly that is NEC® compliant for high-rise buildings, assembly halls, and many hazardous locations.

## REDUCED INSTALLATION STEPS

The biggest advantage of MC cable over pipe-and-wire installations is the reduction in overall time and labor to achieve neat, workman-like appearance, code compliance and owner satisfaction. A typical MC cable installation requires only 5 steps, where comparable conduit applications require 14. MC cable reduces overall installed costs by roughly 30-50% when compared to pipe-and-wire systems.

## UNLIMITED 90-DEGREE BENDS

Pipe and wire installations require a pull box or junction box after every fourth 90° bend (total of 360 degrees of bends). MC cables aren't limited by that restriction. MC cable eliminates the need for junction boxes between pull points, and also the need for large pipe benders on the job.

## FACTORY TESTED ASSEMBLIES

With conduit installations, the vast majority of insulation damage happens during installation. MC cable assemblies are factory tested before leaving the plant, and conductors are fully protected inside the armor during shipping and installation. That greatly reduces the potential for damaged conductors in the finished job.

## IDEAL FOR VERTICAL INSTALLATIONS

Southwire's patented Riser MC™ High Rise cable is specifically designed for use in vertical installations without the need for additional conductor supports, offsets, or junction boxes that would otherwise be required per NEC® 330.30 and 300.19. This UL Listed, NEC compliant construction includes a polymeric binder jacket over the conductors and under the armor that provides continuous support of the conductors throughout the entire length of the cable. Riser MC™ High Rise cable is UL Listed and NEC recognized as Type MC cable.

## COMPARISON OF COMMON INSTALLATION ITEMS, MC CABLE VS. CONDUIT

	MC	CONDUIT
Requires "neat and workmanlike" installation	YES	YES
Required supports (maximum length between supports)	6 Feet	10 Feet
Support with clamps and trapeze	YES	YES
Assembly tested	YES	NO
Unlimited number of bends	YES	360° Maximum

Note: Beginning with the 2014 National Electrical Code (NEC), article 330.30(B) allows for listed MC Cables (including Riser MC™ High Rise Cable) with ungrounded conductors 250kcmil and larger to be secured at intervals not exceeding 10 feet in vertical installations. Prior to the 2014 NEC, this securing requirement was every 6 feet.

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# SECTION 1. PRE-ORDER, PRE-INSTALLATION CHECK LIST

Like conduit, MC cable installations must look neat and workmanlike for owner satisfaction, as well as code compliance. Plan for runs that lay either parallel or perpendicular to walls. Keep groups of cable evenly spaced and parallel around bends. In the end, total labor for an attractive MC cable installation will be significantly lower than an equivalent pipe-and-wire installation.

The following questions must be answered before installing MC feeder cable. This section will cover each of these items in more detail.

- Will insulated conductors and grounds be copper or aluminum alloy?
- What size feeders and what length will be required? How many conductors will be required in each MC cable?
- Will any of the MC cables be used for parallel runs?

NOTE: This is very important! Each MC cable in a parallel run must have the correct ground conductor included inside the MC cable. If the grounds are undersized, the cables will not meet code and the installation will be rejected by the electrical inspector.

- Will any of the MC cables be direct-buried or encased in concrete?
- Will any of the MC cables be installed in vertical applications?
- What type of MC cable fittings will be required?
- What is the maximum size reel that you can handle on the job site?
- What type of support system will be used?
- How many bends will be required? Will radius rollers or sheave wheels be required?
- Where are pull locations? What other equipment will be needed (tugger, ropes, etc.)?

## DETERMINING CONDUCTOR TYPES

### COPPER CONDUCTORS

Southwire's MC cable with copper conductors is manufactured with soft-drawn copper, type THHN/THWN conductors rated 90°C dry.

Number of insulated conductors – Standard MC cables are available with either three or four insulated conductors. Custom cables are available.

Conductor sizes – Copper conductors are available in sizes 1 AWG through 750 kcmil.

Bare or insulated ground conductors – MC cable assemblies that use copper conductors sized 1/0 AWG and larger will have bare copper ground conductors as standard construction. Cables that use copper conductors 1 AWG or smaller have green insulated ground conductors as standard construction. Insulated ground conductors or additional ground conductors can be supplied in any MC cable.

## 8000 SERIES ALUMINUM ALLOY CONDUCTORS

Southwire's MC cable with aluminum alloy conductors uses Southwire's patented Alumaflex® 8000 Series (AA8176) aluminum alloy. Insulation is either type XHHW-2 insulation, rated 90°C in wet\* or dry locations, or THHN/THWN insulation, rated 90°C dry/75°C wet. Triple-e® conductors have delivered reliable power for many decades, and match copper for connectivity, torque retention and yield strength.

**Number of insulated conductors** – Standard MC cables are available with either three or four insulated conductors. Custom cables are available.

**Conductor sizes** – Alumaflex® brand aluminum conductors are available in sizes 6 AWG through 1000 kcmil.

**Bare or insulated ground conductors** – MC cable assemblies with insulated aluminum conductors will provide bare aluminum alloy grounding conductors as standard construction. MC cable with aluminum conductors can also be supplied with copper equipment grounding conductor(s). Insulated grounding conductors or additional ground conductors can be supplied in any MC cable. These constructions may be subject to Southwire manufacturing lead time and minimum order quantities.

**Terminating lugs for aluminum conductors** – When converting a project from copper conductors to aluminum conductors, the aluminum conductors' overall size will be larger. When terminating at panels and switch gear, it is important to make sure that the lugs are sized for the aluminum conductor.

### Example:

When converting a project from 500 kcmil copper to 750 kcmil aluminum alloy, make sure that the lugs are sized for the larger 750 kcmil conductor. Equipment must be UL listed with the larger lugs. If time permits, before ordering switchgear, let the manufacturer know that you plan on using aluminum alloy conductors.

## NUMBER OF CONDUCTORS IN ASSEMBLY, AND CABLE LENGTH

When ordering MC feeder cable, electrical contractors must know the number of conductors and overall length needed for each cable run.

First find out whether the installation is single-phase or three-phase. This will determine whether MC cables will need three or four insulated conductors plus ground. Remember the equipment grounding conductor usually will be bare. Insulated grounds are available.

When measuring the overall feeder length required for a particular run, calculate the total cable required, then add in an additional make-up length. As rule of thumb, add twice the distance from floor to ceiling for make-up lengths.

## PARALLEL CIRCUITS

NOTE: This is very important!

Each MC cable in a parallel run must have the correct equipment grounding conductor included inside the MC cable. The equipment grounding conductor must be sized to match the upstream over-current protection device as provided in NEC® Table 250.122. Cables with undersized grounds will not meet code and the installation will be rejected by the electrical inspector. **See NEC® 250.122 Minimum Size Equipment Conductors For Grounding Raceway and Equipment on page 9.**

\*Wet locations require an overall PVC jacket per UL 1569 & NEC® 330



## REFERENCE INFORMATION

<b>NEC® TABLE 250.122 - MINIMUM SIZE EQUIPMENT GROUNDING CONDUCTORS FOR GROUNDING RACEWAY AND EQUIPMENT</b>		
RATING OR SETTING OF AUTOMATIC OVERCURRENT DEVICE IN CIRCUIT AHEAD OF EQUIPMENT, CONDUIT, ETC., NOT EXCEEDING (AMPERES)	SIZE (AWG or kcmil)	
	COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM*
15	14	12
20	12	10
60	10	8
100	8	6
200	6	4
300	4	2
400	3	1
500	2	1/0
600	1	2/0
800	1/0	3/0
1000	2/0	4/0
1200	3/0	250
1600	4/0	350
2000	250	400
2500	350	600
3000	400	600
4000	500	750
5000	700	1200
6000	800	1200

Note: Where necessary to comply with 250.4 (A)(5) or (B)(4), the equipment grounding conductor shall be sized larger than given in the table. \*See installation restrictions in 250.120. Reprinted with permission from NFPA, 70-2017, the National Electrical Code® Copyright 2016, National Fire Protection Association MA 02169. This reprinted material is not the official position of the NFPA on the referenced subject which is represented solely by the standard in its entirety.

### CABLES FOR DIRECT BURIAL OR CONCRETE ENCASED

When MC cable is installed in wet locations, direct-buried or concrete encased, it must be further protected with a PVC jacket. When a PVC jacket is extruded over the MC cable assembly, the product is listed for these applications. The PVC jacket is also sunlight-resistant. Southwire's standard PVC jacket is black. Other colors are available.

### CABLES FOR VERTICAL RUNS

Riser MC™ cable is specifically designed for use in vertical installations to eliminate the need for additional conductor supports, offsets, or junction boxes that would otherwise be required per NEC® 300.19. Standard MC cable may be used in vertical applications provided that the installation includes the required support methods, offsets, and/or junction boxes required per NEC® 300.19 and 330.30

### MC CABLE FITTINGS

MC cable must be installed using fittings that are UL listed for this product. Fittings that are only listed for Flexible Conduits are not permitted to be used on MC cables. Listed MC cable fittings provide a shoulder that protects conductors from any sharp edges in the armor. Anti-short bushings are not required by the NEC® for MC cables. MC cable fittings are available for wet and dry locations, in hub sizes from 1 to 3 inches, and several armor diameter ranges. Section 2 gives more detail on selection and use of MC cable fittings.

## MAXIMUM REEL SIZE

Southwire can ship MC feeder cable on many different reel sizes. Large reels may require that the contractor have appropriate handling equipment on the job site to move reels once they are delivered. It is also important to consider the dimensions of doorways, elevators, etc. Southwire can provide information on reel sizes and weights when the jobsite order is quoted.

## CABLE SUPPORT SYSTEMS

Support systems are a key element in producing neat, workmanlike MC cable installations that are acceptable to both inspectors and owners.

These MC cable support systems include:

- Channel struts and threaded rod
- Straps and cable clamps for flush mounting
- Basket type/wire mesh

Generally in horizontal applications, support systems used for metal conduit also can be used for MC cable, except that the supports are installed at 6-foot intervals for MC cable instead of the 10-foot intervals required for conduit installations. Examples of support systems that can be used with either conduit or MC cable include strut and trapeze systems, and flush mounting with straps and clamps.

More detailed information on installation of cable support systems appears in Section 2 of this guide.

## ROLLERS AND SHEAVES NEEDED FOR INSTALLATION

Except for very simple installations of smaller cables, during the pull MC cable will need to be supported by rollers, and guided around bends with sheaves and roller assemblies.

The number of bends in an MC cable pull will be dictated by the need for a neat, workmanlike installation. Like conduit, MC cable installations must look neat for owner satisfaction. Plan for runs that lie either parallel or perpendicular to walls. All UL Listed Type MC cables, including MEGA MC™ cable, Riser MC™ High Rise cable, and PVC Jacketed Feeder MC cable are subject to a minimum bend radius of seven times the OD of the finished cable (per NEC 330.24(B)).

Pre-plan the number and location of rollers, sheave wheels or radius roller assemblies, if they are required. Rollers and sheave assemblies must be ordered in time to have them available for the actual installation.

All of these factors will be important in planning the actual cable pull as described in Section 2, “Cable Rigging and Installation.”

### CAUTION

To meet NEC® requirements and to avoid cable damage, each bend must have a final installed radius that is at least seven times the diameter of the MC cable being installed. Pulling radius may need to be greater.

# SECTION 2. CABLE RIGGING AND INSTALLATION

Remember, code compliance is not the same as owner satisfaction for either MC cable or conduit. MC cable installations with parallel and perpendicular layouts can look just as good as conduit, with less effort.

## BASIC MC CABLE INSTALLATION STEPS

- Hanging the systems
- Installing rollers and sheaves
- Preparing MC cable for installation
- Pulling MC cable
- Terminating MC cables

**NEC® 100.12 MECHANICAL EXECUTION OF WORK:  
ELECTRICAL EQUIPMENT SHALL BE INSTALLED  
IN A NEAT AND WORKMANLIKE MANNER**

## HANGING THE SUPPORT SYSTEMS

Supporting and securing intervals – According to NEC® Section 330.30, MC cable must be supported at intervals of 6 feet or less. The support interval requirement is waived when the cable is fished. This is a major benefit of using MC cable over wiring products that can't be fished during remodeling.

**See NEC® 330.30 Securing and Supporting on page 19.**

In applications where the appearance of the MC cable is particularly important, supports installed closer than the required 6-foot intervals may be recommended. The use of these additional supports will reduce cable sag and provide a neater installation.

**Supporting MC cable in vertical applications** – Southwire's UL Listed Riser MC™ High Rise cable is specifically designed for use in vertical installations to eliminate the need for additional conductor supports, offsets, or junction boxes that would otherwise be required per NEC® 300.19. Riser MC™ cable includes a polymeric binder jacket under the armor and over the conductors that provides continuous support for the conductors throughout the entire length of the cable. Per NEC® 330.30, MC cables in vertical applications shall be secured at intervals not exceeding 10 feet for cables with ungrounded conductors sized 250kcmil and larger.

Standard MC cables are not designed to support the cable weight in long vertical installations. Long vertical runs of standard MC cables must meet the same requirements used for supporting conductors in vertical raceways shown in NEC® Table 300.19(A). In addition, NEC® Article 392 also requires MC cable to be secured in vertical cable tray installations. For special riser-cable construction of MC cable, exceptions can be made to these vertical support distance requirements in Table 300.19(A).

Using standard MC cable, you may be able to meet the support requirements of Table 300.19(A) by pulling horizontal offsets in the cable at the required vertical distance. Be sure to verify that offsets will meet local inspection requirements. Consult with the MC cable manufacturer for other alternatives for supporting large sized MC cable in long vertical runs. **See Support In Vertical Raceways page 19.**

**Channel struts and threaded rod** — For trapeze installations, use channel struts supported by threaded rods that are hung from anchors set in concrete or attached to building supports. To install the anchors:

- Drill a hole with the diameter of the anchor. Make the hole deeper than the length of the anchor or screw.
- Clean the debris from the hole and drive the rod hanger into the hole.
- Thread the rod in the hanger and bolt the strut to the other end of the threaded rod.
- Follow manufacturer's recommendations to ensure hangers are secure.



MC cable using strut support systems



MC cable using trapeze support system

**Straps and cable clamps** — A variety of straps, clamps, staples and hangers are available to secure specific sizes of MC cable directly to the supporting surface. Before ordering clamps make sure that you have selected the correct clamp size. Verify the overall dimensions of the MC feeder cable and compare them with the published clamp sizes. Use any of these supports only for the MC cable size indicated on the hardware or on the support packaging. In vertical applications, NEC® 330.30 allows MC cable to be secured at intervals not exceeding 10 feet for cables with ungrounded conductors sized 250kcmil and larger.



MC cable secured every 6' with straps and clamp



MC cable secured every 6' with straps and clamp

Cables containing four or fewer conductors smaller than 10 AWG must be secured within 12 inches of every termination. (There are some exceptions in NEC® Article 330.30 Securing and Supporting on page 19.)

**Basket type wire mesh** – Basket type wire mesh cable supports — also called wire basket support systems — are gaining acceptance as a dedicated support system. These basket trays are lightweight and easy to install. They can be used for either vertical or horizontal installations. When used as a support system, they are not classified as cable trays in the NEC® handbook.



Wire Mesh Support System with Type MC cable

A common misconception about basket type wire mesh supports is that these systems are classified as a cable tray installation and must be installed and inspected per NEC® Article 392. MC cable installations using wire mesh support systems are not required to meet the requirements outlined in Article 392. This is because wire mesh systems are considered an exposed installation. MC cable installed using a wire basket support system is required to be secured to the basket system every 6 feet. If MC cable is installed per Article 392, securing every 6 feet is no longer required.

**See NEC® 330.30 Securing and Supporting on page 19.**

NEMA Standards Publication VE 2-2001, Cable Tray Installation Guidelines, provides installation instructions for wire mesh support systems as well as other types of cable tray systems.

## INSTALLING ROLLERS AND SHEAVES

First, determine the number and location of rollers, sheave wheels or radius roller assemblies that are required. Proper placement of sheave wheels, pulleys and roller help protect the cable, and will reduce the installation time.



Radius Rollers



Sheave



Radius Rollers

Be sure that sheaves and rollers are mounted securely to withstand the required pulling forces. Sheave wheels, pulleys and rollers must be maintained and lubricated to reduce friction.

**Pulley sizes and count** – No two pulls are alike. Some pulls require tuggers, and some can be done by hand. The size and the number of pulleys needed depend on the size of the conductors and length of the pull.

**Example:**

When installing a 750 kcmil, three-conductor aluminum alloy MC feeder cable, a radius roller may be required instead of an individual sheave wheel.

The overall diameter of the 750 kcmil three-conductor cable is approximately 2.674 inches. The minimum bending radius for MC cable per NEC® Section 330.24 is seven times the cable’s overall diameter (7 x 2.674 inches = 18.72 inches). The required diameter of an individual sheave wheel for this bending radius is 2 x 18.72 = 37.44 inches. Most manufacturers do not make individual wheels larger than 36 inches, therefore a radius roller assembly that gives a bending radius of 38 inches or larger is required.

**Sheave wheel sizes and types** – When pulling cable around bends, large sheave diameters will reduce the amount of sidewall pressure created at each bend. If you have a large bending radius you may not be able to find a radius roller large enough to meet the required bending radius for this installation. Large cables 1 AWG – 750 kcmil may require the use of radius rollers, in which are multiple wheels mounted together provide the required bend radius.



Example of using multiple sheave wheels to achieve required bending radius

Individual sheaves should have a minimum inside radius of 1.25 inches. Sheave or radius rollers should be located every 20 degrees of bend.

**NOTE:** Never use a three-sheave assembly on a 90-degree bend to pull MC cable.

BENDING ANGLE (degrees)	NUMBER OF SHEAVES
0-20	1
21-40	2
41-60	3
61-80	4
81-90	5

**Roller spacing and mounting** – Roller spacing varies with cable weight, cable tension and cable construction. For heavy cables or long pulls, the equation in Annex A, “Calculating Roller Spacing and Cable Pulling Tensions,” will help calculate roller spacing. To check the calculated value, use a length of cable to determine maximum spacing under no tension. In general, position rollers so that cables do not drag across surfaces, or rub against objects that can be damaged or that can damage the cable.

## PREPARING MC CABLE FOR INSTALLATION

Prior to pulling MC cable, prepare the end by stripping the armor back to the insulated conductors for a length of two to three feet.

**Cutting and stripping MC cables** – Take special care when cutting the armor on MC cable. Ensure that the cut does not penetrate the conductors under the armor. Here are two common methods of cutting MC cable armor:

### Method 1: Lengthwise cut

Cut lengthwise along the interlocked armor, being careful not to cut into the insulated conductors. If the cut is too shallow to completely separate the segments, you can insert a small screwdriver into the cut to break them free.

### Method 2: Cutting two ribs

Cut two adjacent ribs of the armor. Grip the cable on each side of the cut. Then twist and slide the armor off.

The three most common tools used for cutting MC cable are the rotary cutter, ring cut saw, and the hacksaw. Size and type of the cable determines the cutting tool you choose.

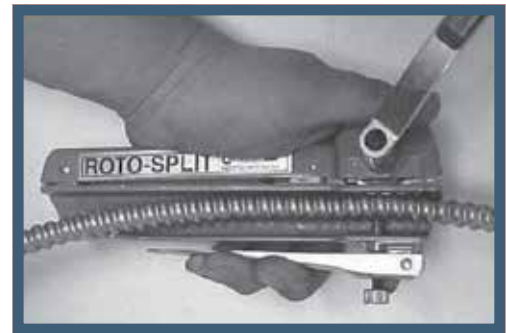
### (A) ROTARY CUTTER

Rotary cutters accommodate armor diameters up to 1.8 inches.

To cut cable armor lengthwise:

- (1) Insert the cable into the tool chamber.
- (2) Clamp the tool tightly around the armor, but do not force it.
- (3) Rotate the crank handle smoothly to cut the armor. Then release clamp pressure.
- (4) Grip the cable on each side of the cut, twist and slide the armor off.

If the cut is too shallow, separate the casing by inserting a small screwdriver into the cut.



Manual rotary cutter used primarily for diameters up to 1.8 inches

### (B) MOTORIZED SAW



Motorized saw cuts armor and conductors



Using motorized saw to cut armor sheath to cut two adjacent convolutions on armor between 1.8 & 5 inches

Motorized ring cut saws deliver fast cutting for both lengthwise cuts and ring cuts. They handle cable up to 5 inches in diameter.

### (C) HACKSAW

Use a sharp hacksaw blade with at least 32 teeth per inch to cut any size of armored cable. You will need a heavy-duty frame to hold the cable taut.

- (1) Secure the cable in a vise or support.
- (2) Cut two adjacent convolutions at approximately 60 degrees (illustration).
- (3) Remove the cable from the vise.
- (4) Grip the cable on each side of the cut, twist and slide off the armor.



Using hacksaw to cut two adjacent convolutions



Removing mylar tape from conductors

### CAUTION

Cutting MC cable armor may leave sharp edges. Always protect your hands and arms with protective sleeves and work gloves.

## PULLING MC CABLE

**Assessing the pull** – Begin planning an MC cable pull by assessing the difficulty of the pull. The vast majority of MC cable pulls are less than 200 feet, with only a few bends. These installations generally require no calculations of pulling tension and sidewall pressure. This section will give some general guidelines and considerations for simple pulls. For more complex installations, refer to Annex A, "Calculating Roller Spacing and Cable Pulling Tensions," in the back of this book.

**General caution about bending radius and sidewall pressure** – The robust construction of MC cable does not mean that it is indestructible. To protect the cable while pulling, you must configure sheave wheels, pulleys and rollers to prevent damage to the cable from bending or excessive sidewall pressure.

**Bending radius for permanent training** – Before the cable is pulled in, check the radius of each bend that will be in the cable after installation. The minimum allowable bending radius for cable with interlocked armor or corrugated continuous welded armor cable is seven times the overall diameter of the cable (per NEC® 330.24). Cables with smooth (non-corrugated) continuous welded armor require a minimum bend radius of 10 to 15 times the overall diameter of the cable. As long as you observe the limits on pulling tension and sidewall pressure, there is no restriction on the number of bends in an MC cable installation.



**Bending radius for cable under tension** – When pulling MC feeder cable, the factor that limits pulling tension is usually the pressure exerted on the cable sidewall when pulling around bends.

When MC cable is pulled around a bend, the pulling tension causes pressure on the sidewall of the cable. Sharp bends concentrate the sidewall pressure in a small area, so larger radiuses allow higher pulling tensions.

When pulling MC cable through a series of bends, pulling tension is cumulative. If the radiuses are all equal, the first bend will see the least tension and create the least sidewall pressure. As the cable goes through the last bend of a series, it is subjected to all the tension required to pull it through the earlier bends. The result is that the last bend typically will have the most tension and the most sidewall pressure.

To avoid cable damage, it's important to make sure that the radiuses around all bends are large enough to keep the pressure on the cable sidewall within recommended limits. A typical sidewall bearing pressure limit for Type MC cable is 300 pounds of pulling tension per foot of bend radius. By this rule of thumb, a 36-inch bend radius would limit the pulling tension to 900 pounds.

**NOTE:** Be careful about relying on pulling-tension experience with pulling single-conductor or non-armored PVC jacketed cables. In general, because of the sidewall pressure created during the pull, interlocked armored cable under pulling tension must use larger bending radiuses than those allowed for non-armored, non-shielded cables with the same number of conductors and the same conductor size.

If there is any question about the sidewall pressure and pulling tension with MC feeder cables, please refer to Annex A, "Calculating Roller Spacing and Cable Pulling Tensions." These calculations will help to determine whether your pull will be easy, difficult or impossible. If you have further questions, or need additional help concerning your particular installation, please contact your Southwire Project Engineer.

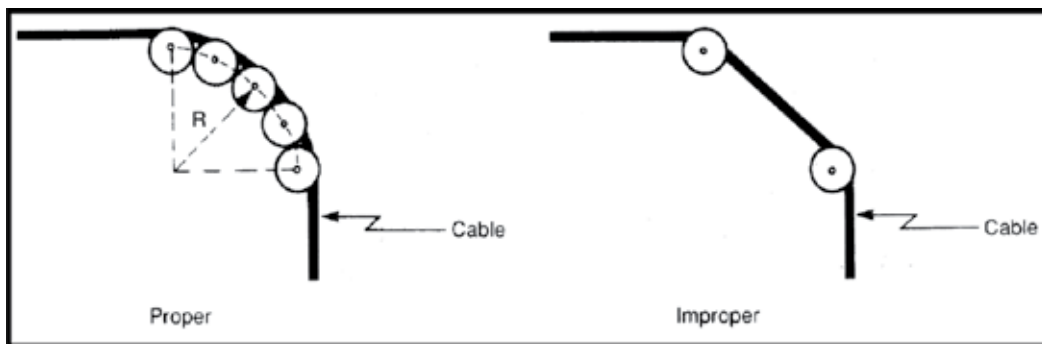


Fig. 1 - SHEAVE CONFIGURATION

**Securing pull rope** – To pull MC feeder cable into position, first secure the pull rope to the cable. The best way to do this is by securing the pull rope to the conductor assembly and then tape the armor to the conductors.

For any MC cable installation method, all pulling forces should be exerted directly on the conductors. Never apply pulling forces directly to the armor or binder jacket. Always refer to the pulling equipment and accessories manufacturers' instructions for proper installation and pulling information.

### Method 1: Southwire pulling heads

Southwire can provide cable lengths with pulling heads already attached to each conductor.

These factory installed pulling heads include a pulling eye for attaching a pull rope.



### Method 2: Using a basket weave grip

- Remove approximately 3 to 4 feet of the armor to provide access to the conductor assembly.
- Strip back insulation about 12-16 inches and cut all but 8-12 strands per conductor.
- Weave the conductor strands through the pull rope. Make sure the strands are secured to the pull rope and apply tape to the tied off strands.
- Tape the armor to the conductor assembly. This will apply all pulling forces directly to the conductors. This will prevent armor from unraveling. **NEVER APPLY ANY PULLING FORCES DIRECTLY TO THE ARMOR.** All forces should be directly applied to the conductor assembly. Begin the pull.



Securing pull rope to cable assembly



Securing basket grip to conductor assembly to avoid pulling conductors out of armor

**Method 3: Using a wire-mesh grip or pulling eye** This method provides greater strength than Method 2.

- Attach a pulling eye to the core conductors.
- Attach a grip over the armor to prevent it from sliding back.
- Expect some damage to the conductors under the grip. Remove the damaged conductor ends after pulling.

**Installation tip:** Attach a pull-back cord to the pulling eye on the cable and pull the cord through with the cable. Then use the pull-back cord to get rope back quickly to start next pull.

## TERMINATING MC CABLES

**Cable fittings** – MC cable must be installed using fittings specifically designed and listed for this type of cable. Be sure to order the proper fittings for the planned installation.

UL-listed MC cable fittings are designed with a shoulder that protects conductors from any sharp edges on the cut edge of the armor. The NEC® handbook does not require anti-shortbushings when UL-listed MC cable fittings are used. MC cable fittings are available for both wet and dry locations and for hub sizes ranging from 1 to 3 inches.

**NEC® 330.40 BOXES AND FITTINGS  
FITTINGS USED FOR CONNECTING TYPE  
MC CABLE TO BOXES, CABINETS, OR  
OTHER EQUIPMENT SHALL BE LISTED AND  
IDENTIFIED FOR SUCH USE.**

With Riser MC™ cable - Southwire's Riser MC™ cable is UL Listed as Type MC and can be used with any NEC compliant fittings, clamps, straps, hangers, etc provided that they are appropriately sized for the Riser MC™ cable OD. When terminating Riser MC™ cable, the binder jacket should be removed flush with the end of the armor prior to installing the fitting.

**Transitions and splicing** – In general, MC cable requires fewer splices when compared to conduit and wire installations. Occasionally, you will need to splice or transition from one wiring method to another wiring method, such as from a conduit system to a MC cable. This transition will require a junction box.

**Hardware manufacturers** – Here is a partial list of hardware manufacturers for MC cable. This list is not all-inclusive, but is meant to help the installer find the hardware needed for a complete installation.

PRODUCTS	MANUFACTURER	WEBSITE
Fittings	Arlington	<a href="http://www.aifittings.com">www.aifittings.com</a>
Fittings	O Z Gedney	<a href="http://www.o-zgedney.com">www.o-zgedney.com</a>
Fittings	American Connectors	<a href="http://www.americanconnectors.com">www.americanconnectors.com</a>
Clamps/Fittings	Thomas & Betts	<a href="http://www.tnb.com">www.tnb.com</a>
Basket System	Cablofil	<a href="http://www.cablofil.com">www.cablofil.com</a>
Strut/Basket System	B-Line	<a href="http://www.b-line.com">www.b-line.com</a>
Strut	Globe Strut	<a href="http://www.globestrut.com">www.globestrut.com</a>
Strut	Super Strut	<a href="http://www.tnb.com">www.tnb.com</a>
Ropes, Tuggers, Pulling Heads	Southwire	<a href="http://www.southwire.com">www.southwire.com</a>
Hangers/Supports/Beam Clips	Steel City	<a href="http://www.tnb.com">www.tnb.com</a>
Modular Framing/Support Systems	Kindorf	<a href="http://www.tnb.com">www.tnb.com</a>
Basket Grip	Slingco	<a href="http://cablegrip.com">cablegrip.com</a>
Radius Rollers/Sheaves/Tuggers	HIS Business Manufacturing Co.	<a href="http://hizbiz.com">hizbiz.com</a>

STANDARD MEGA MC™ CABLE SUPPORT IN VERTICAL RACEWAYS * * *		
SIZE OF WIRE	ALUMINUM (feet)	COPPER (feet)
18 AWG through 8 AWG	100	100
6 AWG through 1/0 AWG	200	100
2/0 AWG through 4/0 AWG	180	80
Over 4/0 AWG through 350 kcmil	135	60
Over 350 kcmil through 500 kcmil	120	50
Over 500 kcmil through 750 kcmil	95	40
Over 750 kcmil	85	35
Table based on NEC® 300.19 (A)		***See note at the bottom of this page.

### NEC® 330.24 BENDING RADIUS SECTION

Bends in Type MC cable shall be so made that the cable will not be damaged. The radius of the curve of the inner edge of any bend shall not be less than required in 330.24 (A) through (C).

- (A) Smooth Sheath
  - (1) Ten times the external diameter of the metallic sheath for cable not more than 19 mm (3/4 in) in external diameter.
  - (2) Twelve times the external diameter of the metallic sheath for cable more than 19 mm (3/4 in) but not more than 38 mm (1 ½ in) in external diameter.
  - (3) Fifteen times the external diameter of the metallic sheath for cable more than 38 mm (1 ½ in) in external diameter.
- (B) Interlocked – Type Armor or Corrugated Sheath. Seven times the external diameter of the metallic sheath.
- (C) Shielded Conductors. Twelve times the overall diameter of one of the individual conductors or seven times the overall diameter of the multi-conductor cable, whichever is greater.

### NEC® 330.30 SECURING AND SUPPORTING SECTION

- (A) General - Type MC cable shall be supported and secured by staples, cable ties, straps, hangers, or similar fittings or other approved means designed and installed so as not to damage the cable.
- (B) Securing - Unless otherwise provided, cables shall be secured at intervals not exceeding 1.8 m (6 ft). Cables containing four or fewer conductors sized no larger than 10 AWG shall be secured within 300mm (12 in) if every box, cabinet, fitting, or other cable termination. In vertical installations, listed cables with ungrounded conductors 250 kcmil and larger shall be permitted to be secured at intervals not exceeding 3m (10ft).
- (C) Supporting - Unless otherwise provided, cables shall be supported at intervals not exceeding 1.8 m (6 ft).  
Horizontal runs of Type MC cable installed in wooden or metal framing members or similar supporting means shall be considered supported and secured where such support does not exceed 1.8 m (6 ft) intervals.

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\*\*\* The information contained in this table applies to standard MEGA MC™ cable constructions. Southwire's Riser MC™ cable construction is not subject to the requirements of this table because the conductors are supported continuously throughout the entire length of the cable.

# SECTION 3. APPLICATION AND DESIGN GUIDE

There are a variety of applications that are suitable for MC cable installations. All MC cable installations are required to meet both NEC® and UL requirements. When designing an installation using MC cable it is important to define “neat and workmanlike” installations in the design specification.

## SPECIFYING “NEAT AND WORKMANLIKE” INSTALLATIONS

To ensure a neat and workmanlike installation in your design it is important to include the following language in your specification: “MC Cable shall be installed parallel or perpendicular to walls. No diagonal runs shall be permitted. Additional supports shall be used when the cable is exposed.” If appearance is critical, such as where the MC will be visible, include: “The use of a basket type wire mesh support system or similar system should be used when the cable is exposed.”

## ADDITIONAL APPLICATIONS OF MC CABLE

Applications for jacketed MC cable that are often overlooked:

- Wet Locations
- Direct burial
- Embedded in concrete
- Vertical installations

In addition, both jacketed and non-jacketed MC cable can be used in many UL fire-rated building assemblies.

**Wet locations** – The NEC® in 330.10(A) (11) allows MC cable to be used in wet locations when the insulated conductors under the metallic covering and the overall jacket are listed for use in wet locations. Cable manufacturers recommend a jacket over the armor and that the insulated conductors under the metallic covering are listed for use in wet locations. The most commonly used conductors in MC cable are THHN/THWN and XHHW. The jacket provides protection for the armor against the possible development of a corrosive cell and limits the amount of water the conductors are subjected to under the armor.

**Direct burial** – Direct burial is a cost-effective approach for projects. Direct buried installations are considered wet locations and require the conductors to be UL - listed for use in wet locations.

You can use jacketed MC cable as direct-buried underground services, feeders and branch circuits. Labeling on the jacket of the cable must identify it as listed for direct burial. The label must read either “FOR DIRECT BURIAL,” “DIRECT BURIAL,” “DIR BUR” or “DIR BURIAL.”

**Concrete encased** – The NEC® handbook states that jacketed MC cable identified for direct burial applications is suitable for installation in concrete. Again, the jacket provides protection to the metal armor.

**Vertical Installations** – Southwire’s patented Riser MC™ High Rise cable is designed specifically for installation in vertical applications without the need for offsets or junction boxes. Riser MC™ High Rise cable is UL Listed as Type MC cable and may be used with any fittings, straps, clamps, hangers, etc that are NEC compliant with standard MC cable installations. Additionally, Riser MC™ High Rise cable is subject to the same bend radius requirements as standard MC cable – 7 times the cable OD.

When embedding MC cable in concrete, inform other trades about the installation, so they can take appropriate care to protect the cable from damage. One way to inform other trades, when using reusable concrete forms, is to spray paint the inside of the form along the path of the MC cable. When the form is removed, the paint should adhere to the concrete, marking the location of the MC cable in the concrete.

## DESIGN OPTIONS FOR FUTURE ELECTRICAL NEEDS

What happens with MC cable when system changes are required? What if a new cable run is needed, or a circuit needs to be upsized after the job is complete? What if MC cable is buried in concrete or direct buried? Good application design can allow for MC feeder cable upgrades that are cost-effective and minimally intrusive. When possible, during the design stage consider one or more of the following options:

- Run an extra circuit where future expansion is anticipated.
- Run one or two empty conduits to install conductors if additional circuits are needed. This is especially useful when MC cable is in concrete or direct buried.
- Use a basket support system for overhead installations
- Install a trench in concrete for under floor applications
- Install raceways under the floor and flush with the floor for future installation and removal of MC cables.

NOTE: NEC® Article 390 for under floor raceways also covers Trench-Type Raceways Flush with Concrete

## GROUNDING CONSIDERATIONS

NEC® Section 330.108 requires that Type MC cable provide an adequate path for equipment grounding. The method used to achieve adequate grounding depends on the construction of the cable. Standard interlocked armor construction requires an equipment grounding conductor in the cable. The conductor may be bare or green insulated.

**NEC® 330.108 - WHERE TYPE MC CABLE IS USED FOR EQUIPMENT GROUNDING; IT SHALL COMPLY WITH 250.118(10) AND 250.122**

The equipment grounding conductor of Southwire Type MC cable can be configured either as a single conductor or as multiple equal-sized conductors whose sum is equal to or larger than the required size. In either case, the grounding capacity is sized in accordance with NEC® requirements (NEC® 250.122).

Other available MC cable constructions may also provide additional equipment grounding conductors that may be used for isolated or redundant grounding.

**Equipment grounding conductors for cables in parallel circuits** – NEC® Section 250.122 requires that parallel conductors have an equipment grounding conductor sized according to the rating or setting of the overcurrent device.

When designing applications with paralleled Type MC cables, the equipment grounding conductor size should be specified large enough to meet the requirements of **NEC® 250.122**. See **NEC® Table 250.122 Minimum Size Equipment Grounding Conductors for Grounding Racway and Equipment on page 9**. Southwire has special constructions available to meet these requirements for high ampacity paralleled circuits.

**NOTE:** An external equipment ground cannot be used for paralleled circuits using MC cables.

## MC CABLE REPAIR

Proper working practices will minimize installation damage to MC cable. When cable damage does occur, replacement is recommended. When replacing the cable is not an option, follow the suggestions below for repair.

- Examine the cable to ensure the conductors under the armor have not been damaged
- It's best to obtain approvals for repairs on MC cable before making the repair. Inform the authority with jurisdiction and the owner's representative of the need for repair.
- Obtain repair kits and materials from distributors who service industrial accounts.
- Follow the manufacturer's instructions provided with the repair materials.

When repairing jacketed cable:

- Before the repair, protect the damaged cable against the ingress of water.
- Make the repair watertight. Use a shrinkable covering or electrical tape.

Always maintain or re-establish the electrical continuity and physical protection afforded by the armor prior to the damage. To re-establish the electrical continuity of the armor, use bonding straps with constant tension springs. Provide mechanical protection for the underlying conductors.

## NEC® COMPLIANCE

**NEC® uses permitted** – NEC® Section 330.10 allows MC cable in indoor and outdoor applications including: exposed or concealed services, feeders and branch circuits, power, lighting, control and signal circuits. When properly jacketed and listed, MC cable can be used in wet or dry locations, direct buried, embedded in concrete, installed in cable trays and raceways, and hung from a messenger as aerial cable. MC cable is also permitted in many hazardous location applications.

The list of permitted uses in Section 330.10 is not all-inclusive. The code language is intended to provide guidance on where and how the cable may be used. See **NEC® 300.10 Uses Not Permitted page 28**.

**NEC® uses not permitted** – Section 330.12 of the NEC® handbook specifies uses of Type MC cable that are not permitted. As with permitted uses, this list is not all-inclusive. In particular, note that the introductory sentence contains the phrase, “unless the metallic sheath is suitable for the conditions or is protected by material suitable for the conditions.” This is the clause that allows jacketed MC cable to be used in direct burial, embedded in concrete, and in corrosive environments. Type MC cable used in these applications will typically have a nonmetallic covering, such as a PVC jacket, over the metallic armor. See **NEC® 300.12 Uses Not Permitted page 28**.

**NEC® references for Type MC cable** – The following NEC® references for Type MC cable are provided as a convenience. These references cover uses related to all Type MC cable designs, including smooth and corrugated sheaths and interlocked armor constructions. As with all electrical installations, the cable system must meet complete NEC® requirements, and be installed in compliance with the relevant UL listing and following the manufacturers instructions.

#### **Wiring and protection**

- ARTICLE 225, Outside Branch Circuits and Feeders  
225.10, Wiring on Buildings
- ARTICLE 230, Services  
230.43, Services; Wiring Methods for 600 Volts, Nominal or Less
- ARTICLE 250, Grounding  
250.118(10), Equipment Grounding Conductor

#### **Wiring methods and materials**

- ARTICLE 300, Wiring Methods  
300.3(3), Nonferrous Wiring Methods (Single Conductor MC)  
300.15, Boxes, Conduit Bodies or Fittings, Where Required  
300.16, Raceway or Cable to Open or Concealed Wiring  
300.22(B) Ducts or Plenums Used for Environmental Air (Smooth or Corrugated MC)  
300.22(C) (1), Wiring in Ducts, Plenums and Other Air-Handling Spaces  
300.50(1), Shielded Cables and Nonshielded Cables in Metal-Sheathed Cable Assemblies

#### **Underground installations over 600 Volts**

- ARTICLE 310, Conductors for General wiring  
310.11, Marking  
310.15 Ampacities for Conductors Rated 0–2000 Volts
- ARTICLE 392, Cable Trays
- ARTICLE 392.3(A), Wiring Methods

#### **Equipment for general use**

- ARTICLE 410, Luminaires (Lighting Fixtures), Lampholders and Lamps  
410.14, Connection of Electric-Discharge Luminaires (Lighting Fixtures)  
410.67(C), Wiring



## Special occupancies

- ARTICLE 501, Class I Locations (Hazardous Locations)  
502.10(A) Class I, Division 1  
502.10(B) Class I, Division 2
- ARTICLE 502, Class II Locations (Hazardous Locations)  
502.10(A) Class II, Division 1  
502.10(A) Class II, Division 2
- ARTICLE 503, Class III Locations (Hazardous Locations)  
503.10(A) Class III, Division 1  
503.10(A) Class III, Division 2
- ARTICLE 518, Places of Assembly  
518.4, Wiring Methods
- ARTICLE 520, Theaters, Audience Areas of Motion Picture and Television Studios  
and Similar Locations  
520.5, Wiring Methods
- ARTICLE 550, Mobile Homes, Manufactured Homes and Mobile Home Parks  
550.16(A) (2), Grounding
- ARTICLE 551, Recreational Vehicles and Recreational Vehicle Parks  
551.47(A), Wiring Methods  
551.55(C), Interior Equipment Grounding
- ARTICLE 552, Park Trailers  
551.48(A), Wiring Methods  
551.56(C) (1), Interior Equipment Grounding

## Special occupancies

- ARTICLE 610, Cranes and Hoists  
610.11, Wiring Methods
- ARTICLE 620, Elevators, Dumbwaiters, Escalators, Moving Walks, Wheelchair Lifts,  
and Stairway Lifts  
620.21, Wiring Methods  
620.81, Metal Raceways Attached to Cars
- ARTICLE 645, Information Technology Equipment  
645.5, Supply Circuits and Interconnecting Cables
- ARTICLE 668, Electrolytic Cells, Interconnecting Cables  
668.30(C), Fixed and Portable Electrical Equipment – Wiring Methods
- ARTICLE 680, Swimming Pools, Fountains and Similar Installations  
680. 21(A) (1) and (4), Motors - Wiring Methods  
680. 23(F) (1), Underwater Luminaires (Lighting Fixtures) – Branch Circuit Wiring

## UL COMPLIANCE

**UL standards and directories** – NEC® 110.3(B) states, “Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling.” Underwriters Laboratories publishes a number of standards and directories that provide detailed information on the construction, performance, application, ratings, and installation aspects of Type MC cable.

The UL standard for the construction and performance of Type MC cable is UL 1569. NEC® Section 330.112 requires the insulated conductors used in MC cable in sizes 14 AWG and larger are to be of a type listed in Table 310.13 or of a type identified for use in Type MC cable. Predominantly, Type MC cable contains thermoplastic Type THHN/THWN conductors manufactured to UL 83 or thermoset type XHHW conductors manufactured to UL 44.

UL directories contain information about the products that they list, recognize and certify. Installers and inspectors use the directories for information on specifying and installing products in accordance with their listing. These directories are helpful tools for understanding the details of how products such as Type MC cable are constructed and marked. The directories also provide information on special or optional ratings, and on terminations. One of the directories covers UL approved methods for maintaining the fire-resistive rating on walls, floors, and ceilings in fire-resistance rated construction, when cables must penetrate them. This information is readily available at the UL website, [www.ul.com](http://www.ul.com).

**UL general information for electrical equipment** – The following information on Type MC cable is reprinted from the UL General Information for Electrical Equipment Directory. This information is needed to fully understand the applications that metal clad cable can be used. The UL product information should be used with the NEC® to assure proper use of the product. Updated information can be found at the UL's website, [www.ul.com](http://www.ul.com).

### PJAZ

Metal Clad Cable

Guide Information for Electrical Equipment for Use in Ordinary Locations

#### GENERAL

This category covers Type MC metal-clad cable. It is rated for use up to 2000 V, and listed in sizes 18 AWG through 2000 kcmil for copper, 12 AWG through 2000 kcmil for aluminum, or copper-clad aluminum, and employs thermoset or thermoplastic insulated conductors. It is intended for installation in accordance with Article 330 of ANSI/NFPA 70, “National Electrical Code” (NEC®).

The cable consists of one or more insulated conductors; one or more grounding conductors (required for interlocked armor, as needed for smooth or corrugated tube); one or more optional optical fiber members; and an overall metal sheath. The metal sheath is an interlocked metal tape, a corrugated metal tube, or a smooth metal tube. The metal sheath of single-conductor cable is nonferrous. A nonmetallic jacket may be provided under and/or over the metal sheath. Cable with metal armor, rated 5,000 to 35,000 V is covered under Medium-Voltage Cable (PITY) and is marked “Type MV or MC.”

Cable with interlocked armor that has been determined to be suitable for use as a grounding means has interlocked aluminum armor in direct contact with a single, full-sized, bare aluminum grounding/bonding conductor. This cable is marked to indicate that the armor/grounding conductor combination is suitable for ground. The equipment grounding conductor required within all other cable with interlocked armor may be insulated or bare, may be sectioned, and is located in the cable core but not in contact with the armor. Any additional grounding conductors of either design have green insulation. One insulated grounding conductor may be unmarked, one other may have only a yellow stripe and the balance have surface markings that indicate they are additional equipment grounding conductors or isolated grounding conductors.

The sheath of the smooth or corrugated tube Type MC cable or a combination of the sheath and a supplemental bare or unstriped green insulated conductor is suitable for use as the ground path required for equipment grounding. The supplemental grounding conductor may be sectioned. When sectioned, all sections are identical. Each additional green insulated grounding conductor has either a yellow stripe or a surface marking or both to indicate that it is an additional equipment or isolated grounding conductor. Additional grounding conductors, however marked, are not smaller than the required grounding conductor.

**UL product markings** – Information regarding temperature rating, voltage rating, cable, and conductor type and size is shown either on a marker tape under the armor or on the surface of a nonmetallic jacket, if used. The following product marking information is taken for the 2005 UL PJAZ Information Guide for Metal-Clad Cable. Another resource for understanding cable markings is the UL Wire and Cable Marking Guide. This information is readily available at UL's website, [www.ul.com](http://www.ul.com).

**UL listing information** – UL listing information can be found at [www.ul.com](http://www.ul.com). This website contains all the information from the referenced directories, as well as other general information relating to UL's products and services. This information is found in the UL online certification directory. The company name or keyword search is usually the easiest way to start.

## PRODUCT MARKINGS

Information regarding temperature rating, voltage rating, cable and conductor Type and AWG size is shown either on a marker tape under the armor or on the surface of a nonmetallic jacket, if used.

Copper-clad aluminum conductors are surface printed "AL (CU-CLAD)" or "Cu-clad Al." Aluminum conductors are surface printed "AL."

Cable employing compact-stranded copper conductors is so identified directly following the conductor size, wherever it appears (surface, tag, carton or reel), by "compact copper." The abbreviations "CMPCT" and "CU" may be used for compact and copper, respectively.

Tags, reels and cartons for products employing compact-stranded copper conductors have the marking: "Terminate with connectors identified for use with compact-stranded copper conductors."

For termination information, see Electrical Equipment for Use in Ordinary Locations (AALZ).

Cable suitable for use in cable trays, direct sunlight or direct burial application is so marked. Cable marked for direct burial is also considered acceptable for encasement in concrete.

Cable marked "Oil Resistant I" or "Oil Res I" is suitable for exposure to mineral oil at 60°C. Cable suitable for exposure to mineral oil at 75°C is marked "Oil Resistant II" or "Oil Res II."

Cable containing one or more optical fiber members is marked "MC-OF."

Cable with a nonmetallic outer jacket that complies with the Limited Smoke Test requirements specified in UL 1685, "Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables," and all unjacketed metal-clad cable may be marked with the suffix "LS."

Cable with an interlocked armor that is intended as a ground path is marked "armor is grounding path component," and is provided with installation instructions.

2005 UL PJAZ.GuideInfo  
Metal-Clad Cable

**MC cable feeders and fire-rated assemblies** – Standard MC cables order do not carry 1-, 2-, and 3- Hour Fire ratings. Some walls, floors and ceilings are required by local building codes to have fire-resistance ratings. These ratings designate resistance to the spread of fire in hours: There are one-, two-, and three-hour ratings. Required fire ratings may appear on construction drawings. Southwire Type MC cable is listed for use in UL 1-, 2-, and 3- Hour Through-Penetration Fire Stop Systems.

The installation of MC cables or other wiring methods must not reduce or negate the rating of fire-rated assemblies and must prevent the passage of smoke, gases and flames from one area to another.

Type MC cables are well suited for installation in fire-rated walls floors and ceilings. The required fire-resistance can be obtained by sealing the openings around cables using a UL-listed method – such as fire caulking or pads – where the cables pass through a rated wall, floor or ceiling.



MC feeder cable in wall with fire stop

**Fire-rated assemblies** – Fire rated assemblies are included in the UL's Fire Resistance Directories. These assemblies, which include the wiring methods permitted, have been tested to determine their fire resistance as an assembly. It is important to remember that no deviation can be made from the components used in the assembly or from the manner in which they are installed.

Penetration fire-stop systems include specially designed components such as blocks with inserts where cables in cable trays pass through fire rated walls. These components are installed on the job. These systems must be installed in accordance with all applicable building codes as well as the instructions provided by the manufacturer and in the product listing.

Be certain cables are protected from physical damage where they pass through floors. This protection can be provided by installation in protective conduit sleeves.

**Fire Resistance Directory** – UL's Fire Resistance Directory covers construction detail necessary for constructing fire rated walls, floors and ceilings under the category "Through Penetration Fire Stop Systems." The Fire Resistance Directory also covers UL-listed materials and methods for sealing walls, ceilings , or floors penetrated by electrical cables, conduit, cable tray or other equipment.

Always consult the Fire Resistance Directory for the proper method of sealing openings. Openings that are not sealed in accordance with the UL listed "Through-Prevention Fire Stop Systems" are subject to rejection by inspecting authorities.

**NOTE:** The listed through-penetration fire stop systems can be found at [www.ul.com](http://www.ul.com)

## REFERENCE INFORMATION

### NEC® 330.10 USES PERMITTED

#### (A) General Uses

Type MC cables shall be permitted:

- (1) For services, feeders, and branch circuits
- (2) For power, lighting, control, and signal circuits
- (3) Indoors or outdoors
- (4) Where exposed or concealed
- (5) Direct buried where identified for such use
- (6) In cable tray where identified for such use
- (7) In any raceway
- (8) As aerial cable on a messenger
- (9) In hazardous (classified) locations as permitted
- (10) In dry locations and embedded in plaster finish on brick or other masonry except in damp or wet locations
- (11) In wet locations where any of the following conditions are met:
  - a. The metallic covering is impervious to moisture.
  - b. A lead sheath or moisture-impervious jacket is provided under the metal covering.
  - c. The insulated conductors under the metallic covering are listed for use in wet locations.
- (12) Where single-conductor cables are used, all phase conductors and, where used, the neutral conductor shall be grouped together to minimize induced voltage on the sheath.

#### (B) Specific Uses Type MC cable shall be installed in compliance with Articles 300, 490, 725, and 770.52 as applicable and in accordance with 330.10(B)(1) through (B)(4). Type MC cables shall be permitted:

- (1) **Cable Tray** Type MC cable installed in cable tray shall comply with 392.3, 392.4, 392.6, and 392.8 through 392.13.
- (2) **Direct Buried** Direct-buried cable shall comply with 300.5 or 300.50, as appropriate.
- (3) **Installed as Service-Entrance Cable** Type MC cable installed as service entrance cable shall be permitted in accordance with 230.43.
- (4) **Installed Outside of Buildings or as Aerial Cable** Type MC cable installed outside of buildings or as aerial cable shall comply with 225.10, 396.10, and 396.12.

FPN: The “Uses Permitted” is not an all-inclusive list. The permitted uses specified by the NEC® are not all-inclusive, but only provide guidance on where and how the cable may be used.

### NEC® 330.12 USES NOT PERMITTED

Type MC cable shall not be used where exposed to the following destructive corrosive conditions, unless the metallic sheath is suitable for the conditions or is protected by material suitable for the conditions:

- (1) Where subject to physical damage
- (2) Direct burial in the earth
- (3) In concrete  
FPN to (3): MC cable that is identified for direct burial applications is suitable for installation in concrete
- (4) Where exposed to cinder fills, strong chlorides, caustic alkalis, or vapors of chlorine or of hydrochloric

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**NEC® TABLE 310.15 (B)(16) (FORMERLY TABLE 310.16) ALLOWABLE AMPACITIES OF INSULATED CONDUCTORS RATED UP TO AND INCLUDING 2000 VOLTS 60° C THROUGH 90° C (140° F THROUGH 194°), NOT MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN RACEWAY, CABLE, OR EARTH (DIRECTLY BURIED), BASED ON AMBIENT TEMPERATURE OF 30°C (86° F)\***

SIZE AWG OR kcmil	TEMPERATURE RATING OF CONDUCTOR [SEE TABLE 310.14(A)]						SIZE AWG OR kcmil
	60°C (140°F)	75°C (167°F)	90°C (194°F)	60°C (140°F)	75°C (167°F)	90°C (194°F)	
	TYPES TW, UF	TYPES RHW, THHW, THW, THWN, XHHW, USE, ZW	TYPES TBS, SA, SIS, FEP, FEPB, MI, RHH, RHW-2, THHN, THHW, THW-2, THWN-2, USE-2, XHH, XHHW, XHHW-2, ZW-2	TYPES TW, UF	TYPES RHW, THHW, THW, THWN, XHHW, USE, ZW	TYPES TBS, SA, SIS, FEP, FEPB, MI, RHH, RHW-2, THHN, THHW, THW-2, THWN-2, USE-2, XHH, XHHW, XHHW-2, ZW-2	
	COPPER			ALUMINUM OR COPPER			
18**	–	–	14	–	–	–	–
16**	–	–	18	–	–	–	–
14**	15	20	25	–	–	–	–
12**	20	25	30	15	20	25	12**
10**	30	35	40	25	30	35	10**
8	40	50	55	35	40	45	8
6	55	65	75	40	50	55	6
4	70	85	95	55	65	75	4
3	85	100	110	65	75	85	3
2	95	115	130	75	90	100	2
1	110	130	145	85	100	115	1
1/0	125	150	170	100	120	135	1/0
2/0	145	175	195	115	135	150	2/0
3/0	165	200	225	130	155	175	3/0
4/0	195	230	260	150	180	205	4/0
250	215	255	290	170	205	230	250
300	240	285	320	195	230	260	300
350	260	310	350	210	250	280	350
400	280	335	380	225	270	305	400
500	320	380	430	260	310	350	500
600	350	420	475	285	340	385	600
700	385	460	520	315	375	425	700
750	400	475	535	320	385	435	750
800	410	490	555	330	395	445	800
900	435	520	585	355	425	480	900
1000	455	545	615	375	445	500	1000
1250	495	590	665	405	485	545	1250
1500	525	625	705	435	520	585	1500
1750	545	650	735	455	545	615	1750
2000	555	665	750	470	560	630	2000

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\* Refer to 310.15(B)(2) for the ampacity correction factors where the ambient temperature is other than 30°C (86°F) Refer to 310.15(B)(3)(a) for more than three current-carrying conductors.  
 \*\*Refer to 240.4(D) for conductor overcurrent protection limitations.

**NEC® TABLE 310.15 (B)(2)(a) AMBIENT TEMPERATURE  
CORRECTION FACTORS BASED ON 30°C (86° F)\***

**FOR AMBIENT TEMPERATURES OTHER THAN 30° C (86°), MULTIPLY THE ALLOWABLE AMPACITIES  
SHOWN ABOVE BY THE APPROPRIATE FACTOR SHOWN BELOW)**

AMBIENT TEMP (°C)	TEMPERATURE RATING OF CONDUCTOR			AMBIENT TEMP (°F)
	60°C	75°C	90°C	
10 or less	1.29	1.20	1.15	50 or less
11-15	1.22	1.15	1.12	51-59
16-20	1.15	1.11	1.08	60-68
21-25	1.08	1.05	1.04	69-77
26-30	1.00	1.00	1.00	78-86
31-35	0.91	0.94	0.96	87-95
36-40	0.82	0.88	0.91	96-104
41-45	0.71	0.82	0.87	105-113
46-50	0.58	0.75	0.82	114-122
51-55	0.41	0.67	0.76	123-131
56-60	–	0.58	0.71	132-140
61-65	–	0.47	0.65	141-149
66-70	–	0.33	0.58	150-158
71-75	–	–	0.50	159-167
76-80	–	–	0.41	168-176
81-85	–	–	0.29	177-185

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# SECTION 4. ANNEXES

## ANNEX A. CALCULATING ROLLER SPACING AND CABLE PULLING TENSION

The information contained in Annex A is applicable for all Southwire interlocked armor feeder MC cable constructions including MEGA MC™ cable, Riser MC™ cable, and PVC Jacketed Feeder MC cable.

**Roller spacing calculations** – Roller spacing will vary with cable weight, cable tension and cable construction. To estimate roller spacing, use the following equation.

Roller Spacing

$$s = \sqrt{\frac{8hT}{w}} \text{ feet}$$

Where: s = distance between rollers in feet  
h = height of top roller above objects or the floor  
T = tension in pounds  
w = weight of cable per foot

The distance “s” may be conservative for armored cable because the equation assumes a perfectly flexible cable. When possible, a length of cable should be used to determine maximum spacing under no tension as a check for the calculated values.

**Pulling tension calculations** – Calculations of pulling tensions for MC cable are similar to those for pulling cable in conduit, adjusting the coefficient of friction to reflect using rollers and sheaves. Calculations should be made to indicate whether the pull looks “easy” or “impossible,” making the decision to pull an obvious choice. When a “marginal” situation is encountered, the entire pull should be reviewed. This review may include more rigorous calculations or trial pulls. A final decision should be made based on installation factors known to the end user and installer.

Do not exceed the allowable tension stated by the manufacturer of the pulling eye or 10,000 pounds, whichever is less. Traditional conservative practices limit the allowable tension of a basket grip to 1,000 pounds. Under specific conditions, this limit can be safely exceeded.



**Maximum tension on conductors** – The conductors of the cable are generally the only members that can bear the pulling forces without damage. Do not use metallic shielding wires, tapes, braids or armor not designed for the purpose in pulling tension calculations. It is important to remember that when pulling MC feeder cable, the limiting factor is typically the sidewall bearing pressure.

Definitions for the following equations:

- $T_c$  = tension on each conductor, in pounds
- $S$  = allowable stress from table, in pounds/cmil
- $A$  = area of each conductor, in cmil
- $N$  = number of conductors
- $T_{cable}$  = maximum allowable tension in the cable in pounds
- $T_{device}$  = maximum allowable tension on device in pounds
- $T_m$  = maximum allowable tension is the lesser of  $T_{device}$  or  $T_{cable}$  in pounds

The distance “s” may be conservative for armored cable because the equation assumes a perfectly flexible cable. When possible, a length of cable should be used to determine maximum spacing under no tension as a check for the calculated values.

**Pulling tension calculations** – Calculations of pulling tensions for MC cable are similar to those for pulling cable in conduit, adjusting the coefficient of friction to reflect using rollers and sheaves. Calculations should be made to indicate whether the pull looks “easy” or “impossible,” making the decision to pull an obvious choice. When a “marginal” situation is encountered, the entire pull should be reviewed. This review may include more rigorous calculations or trial pulls. A final decision should be made based on installation factors known to the end user and installer.

Do not exceed the allowable tension stated by the manufacturer of the pulling eye or 10,000 pounds, whichever is less. Traditional conservative practices limit the allowable tension of a basket grip to 1,000 pounds. Under specific conditions, this limit can be safely exceeded.

MAXIMUM ALLOWABLE CONDUCTOR STRESS ( S )		
MATERIAL	TEMPER	ib/cmil
Copper	Soft	0.008
Aluminum	AA-8176	0.006

CONDUCTOR AREA ( A )			
SIZE (AWG)	CROSS-SECTIONAL AREA (cmil)	ib/cmil	CROSS-SECTIONAL AREA (cmil)
14	4110	250	250,000
12	6530	300	300,000
10	10380	350	350,000
8	16,510	400	400,000
7	20,820	450	450,000
6	26,240	500	500,000
5	33,090	550	550,000
4	41,740	600	600,000
3	52,620	650	650,000
2	66,360	700	700,000
1	83,690	750	750,000
1/0	105,600	800	800,000
2/0	133,100	900	900,000
3/0	167,800	1000	1,000,000
4/0	211,600	–	–

**Single conductors**

$T_c = S \cdot A$  pounds       $T_{cable} = T_c$

**Multiple conductors** — Maximum pulling tension for multiple conductors in parallel, or multiplexed, and multiple conductor cables.

Three or fewer conductors

$$T_{\text{cable}} = N T_c \text{ pounds}$$

More than three conductors

$$T_{\text{out}} = -WL + T_{\text{in}} \text{ pounds}$$

**Horizontal straight sections** — The tension for a horizontal straight section of cable can be estimated with the following equation.

$$T_{\text{out}} = \mu WL + T_{\text{in}} \text{ pounds}$$

Where:  $T_{\text{out}}$  = tension out of a section in pounds

$\mu$  = coefficient of dynamic friction ( $\mu = 0.15$ )

$W$  = total cable assembly weight in pounds/foot

$L$  = straight section length in feet

$T_{\text{in}}$  = tension into a section in pounds

The coefficient of friction ( $\mu$ ) equal to 0.15 accounts for the low rolling friction of well-maintained rollers.

**Inclined straight section** – Use the following equation for pulling up an inclined straight section.

$$T_{\text{out}} = -WL(\sin\theta + \mu\cos\theta) + T_{\text{in}} \text{ pounds}$$

Use the following equation for pulling down an inclined straight section.

$$T_{\text{out}} = -WL(\sin\theta + \mu\cos\theta) + T_{\text{in}} \text{ pounds}$$

Where:  $T_{\text{out}}$  = tension out of a section in pounds

$W$  = total cable assembly weight in pounds/foot

$\theta$  = straight section angle from horizontal in radians

$L$  = straight section length in feet

$\mu$  = coefficient of dynamic friction ( $\mu = 0.15$ )

$T_{\text{in}}$  = tension into a section in pound

**Vertical sections** – When pulling straight up or down, the equation for inclined pulls simplifies to the following equations.

Pulling straight up

$$T_{\text{out}} = -WL + T_{\text{in}} \text{ pounds}$$

Pulling straight down

$$T_{\text{out}} = -WL + T_{\text{in}} \text{ pounds}$$

Where:  $W$  = total cable assembly weight in pounds/foot

$L$  = straight vertical section length, in feet

**Tension in bends** – If the sheaves are well maintained, they will not have the multiplying effect on tension that bends in conduit have. The sheaves will turn with the cable, allowing the coefficient of friction to be

assumed zero. This results in the commonly used approximation for conduit bend equation  $(e^{-\mu\phi})$  becoming equal to one. Even though these bends produce no multiplying effect, for heavier cables it is essential to include the force required to bend the cable around the sheave. A 200-pound per bend adder should be used for a three-conductor 500 kcmil copper conductor armored cable. If the sheaves are not well maintained, the bend will have a multiplying effect. The tension in the pull must then be calculated using the same equations used for installations in conduit.

**Tension entering cable pull** – Because the tension entering the cable pull is rarely zero, it is critical that the tension required to remove the cable from the reel be used to calculate the total tension for the installation.

Many times, it is difficult to know the location of the reel of cable until the cable is being installed. The following equations are used to approximate the tension entering the cable pull and can be used to determine how critical the reel position will be for pull.

**Feeding off reel horizontally** – When the cable reel can be elevated so that the cable can be pulled directly into the pull, the following equation should be used to approximate the tension required to remove the cable from the reel.

$$T_{\text{reel}} = 25W \text{ pound}$$

Where:  $T_{\text{reel}}$  = tension in pounds  
 $W$  = total cable assembly weight in pounds/feet

**Feeding off reel vertically** – When the cable reel must be positioned directly below the pull the following equation should be used to approximate the tension required to pull the cable up into the first roller.

$$T = 25W \text{ pound}$$

Where:  $W$  = total cable assembly weight in pounds/feet  
 $L$  = straight vertical section length, in feet

The tension now can be approximated for pulling the cable from a horizontal position when the reel is placed directly under the first roller. To estimate the tension entering the pull when the reel must be placed away from and below the first roller or sheave, use the equation for feeding off the reel vertically where the height ( $L$ ) is the vertical distance between the reel and the first roller. To allow for bending forces as the cable comes off the reel, the minimum tension added should be 25  $W$ .

# ANNEX B. CABLE SPECIFICATIONS

## 26 05 19 WIRE AND CABLE TYPE MC FEEDER CABLE

### PART 1 – GENERAL

#### 1.1 SECTION INCLUDES

- A. Feeder and Services: Type MC Cable for use as services and feeders.
- B. General Applications: Type MC Cable may also be used in the following general applications per based on the National Electrical Code® (NEC®):
  - 1. For services, feeders and branch circuits
  - 2. For power and lighting
  - 3. Indoors
  - 4. Exposed or concealed
  - 5. In cable tray where identified for such use
  - 6. In a raceway
  - 7. In dry locations and embedded in plaster or against other masonry
  - 8. Jacketed MC Cable may be used in wet locations, either direct burial, in underground conduit, or overhead.

#### 1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's product data that materials comply with specified requirements and are suitable for intended application.
- B. Installation Instructions: Manufacturer's installation instructions shall be included in submittal. Industry guides may supplement the manufacturer's instructions.
- C. Manufacturer: Type MC Cables for circuits, feeders and services shall be supplied from a single manufacturer.

#### 1.3 REQUIREMENTS

- A. Underwriters Laboratories: Type MC Cable shall meet the following Underwriters Laboratories (UL) standards.
  - 1. UL 1569 Standard for Metal-Clad Cables
  - 2. UL Standard 83 for Thermoplastic-Insulated Wires and Cables or UL Standard 44 for Thermoset-Insulated Wires and Cables
  - 3. UL Standard 1479 Standard for Fire Tests of Through-Penetration Firestops.
  - 4. UL Classified 1, 2, and 3 Hour Through-Penetration Firestop Systems.
- B. National Electrical Code® : Type MC Cable shall meet the following NEC® requirements.
  - 1. NEC® Articles 230, 300, 330
  - 2. NEC® Class I Div. 2, Class II, Div. 2 & Class III Div. 1 Hazardous Locations.
- C. Federal Specification: Type MC Cable shall meet Federal Specification A-A59544.
- D. Flame Test: Type MC Cable shall pass IEEE 1202 (70,000 BTU/hr) Vertical Cable Tray Flame Test.

## **PART 2 – PRODUCTS**

### **2.1 MANUFACTURER**

- A. Southwire Company, LLC, One Southwire Drive, Carrollton, Georgia, 30119.  
Website: www.southwire.com.

### **2.2 TYPE MC CABLE CONSTRUCTION**

- A. Phase Conductors
1. Aluminum: Aluminum conductors shall be compact stranded AlumaFlex® AA-8176 aluminum alloy.
  2. Copper: Copper conductors shall be compressed class B stranded or equivalent.
  3. Insulation: The conductors shall be constructed with XHHW-2 or THHN/THWN insulation rated for 90°C dry, 90°C wet and rated for 600 volts.
- B. Equipment Grounding Conductor
1. Aluminum: A bare compact aluminum grounding conductor shall be cabled with aluminum phase conductors.
  2. Copper: A bare or green insulated grounding conductor shall be cabled with copper phase conductors.
  3. Service: When installed as a service, the grounding conductor size shall be based on the largest phase conductor.
  4. Feeder: When installed as a feeder, the grounding conductor size is based on the rating of the over-current device.
  5. Parallel Installations: When used in parallel installations, the equipment-grounding conductor shall be specified in accordance with NEC® Section 250.122.
- C. Cable Sheath
1. Armor: Cable shall have an interlocked aluminum armor helically formed around the conductor assembly.
  2. Jacket: When specified, the assembly shall be covered with a black, flame retardant, sunlight resistant jacket.
  3. Riser MC™ cable: When specified, the assembly shall contain a polymeric binder jacket under the armor and over the conductors for the purpose of supporting and protecting the conductors.

### **2.3 TYPE MC CABLE FITTINGS**

- A. Type MC Cable fittings for feeder cable shall be supplied by cable manufacturer. The fittings shall be UL-listed for use with metal-clad cable, Type MC cable, employing interlocking aluminum tape.

## PART 3 – INSTALLATION

### 3.4 INSTALLATION

- A. Neat and Workmanlike Installation: MC Cable shall be installed parallel or perpendicular to walls. No diagonal runs shall be permitted. Additional supports shall be used when the cable is exposed. (The use of a basket type wire mesh support system or similar system should be used when the cable is exposed.)
- B. Manufacturers Instructions: Type MC Cable shall be installed per the manufacturers written installation instructions. Industry guides may supplement the manufacturer's instructions.
- C. Field Support: Manufacturer shall provide, when requested, field engineering support for MC Cable installation.
- D. Manufacturer: Type MC Cables for circuits, feeders and services shall be supplied from a single manufacturer.
- E. Fittings: Type MC Cable fittings supplied by cable manufacturer shall be used for all feeder cable. The fittings shall be UL-listed for use with metal-clad cable, Type MC cable, employing interlocking aluminum tape.
- F. Securing and Supporting: MC Cable shall be secured and supported as specified per NEC® 330.30 for horizontal and vertical installations.
- G. Minimum Bending Radius: Bends in MC Cable shall be made so that the cable will not be damaged. The radius of the curve of the inner edge of any bend should not be less than seven times the cable diameter.
- H. Firestop Systems: MC Cable shall be installed per the cable manufacturer's Through-Penetration Firestop Systems listing by Underwriter Laboratory.
  - 1. Copper: Copper conductors shall be compressed class B stranded or equivalent.
  - 2. Insulation: The conductors shall be constructed with XHHW-2 or THHN/THWN insulation rated for 90°C dry, 90°C wet and rated for 600 volts.
- I. Equipment Grounding Conductor
  - 1. Aluminum: A bare compact aluminum grounding conductor shall be cabled with aluminum phase conductors.
  - 2. Copper: A bare or green insulated grounding conductor shall be cabled with copper phase.

### 3.1 SPECIFIC USES

- A. Type MC Cable may be used in cable tray, as service entrance cables and outside of buildings based on the following NEC® articles.
  - 1. MC Cable installed in cable tray shall comply with Article 392 of the National Electrical Code®.
  - 2. MC Cable installed, as service-entrance cable shall comply with Article 230 of the National Electrical Code®.
  - 3. MC Cable installed outside of buildings shall comply with Articles 225 and 396 of the National Electrical Code®.

### 3.2 USES NOT PERMITTED

- A. Type MC Cable should not be used in wet locations, either direct burial, in underground conduit, or overhead unless the cable is jacketed and contains conductors rated for wet locations.

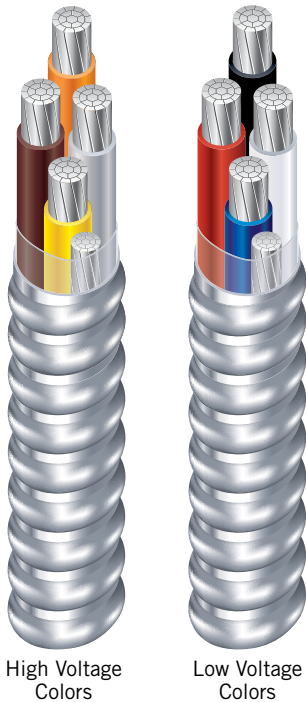
### 3.3 AMPACITY

- A. The ampacity of Type MC Cable shall be determined in accordance with Article 310.15 of the National Electrical Code®. The installation should not exceed the ratings of the terminations and equipment.

# ARMORLITE® MC CABLE

WITH ALUMAFLEX® BRAND TRIPLE E® THHN/THWN-2 CONDUCTORS

1/0 AWG through 900 kcmil Alumaflex® Brand THHN/THWN-2 Insulated Singles with 8000 series Triple E® Aluminum Alloy. Bare Alumaflex® Brand Aluminum Alloy Grounding Conductor. UL Listed. 600 Volts. Lightweight Aluminum Interlocked Armor.



High Voltage Colors

Low Voltage Colors



Lightweight Aluminum Interlocked Armor

600 Volt

Insulated Singles Rated THHN/THWN-2

Bare Alumaflex® Brand Aluminum Alloy Grounding Conductor

## APPLICATIONS Suitable for use as follows:

- Feeder and service power distribution in commercial, industrial, institutional, and multi-residential buildings.
- Power, lighting circuits
- Fished or embedded in plaster
- Concealed or exposed installations
- Environmental air-handling spaces per NEC® 300.22(C)
- Places of Assembly per NEC® 518.4 and theaters per NEC® 520.5
- Installation in cable tray and approved raceways
- Under raised floors for information technology equipment conductors and cables per NEC® 645.5(D) & 645.5(D)(2)
- Class I Div. 2, Class II Div. 2, & Class III Div. 1 Hazardous Locations

## STANDARDS & REFERENCES

Southwire Armorlite® MC Cable meets or exceeds these requirements:

- UL 83
- UL 1569
- UL 1685
- Federal Specification A-A59544 (formerly J-C-30B)
- UL Online Product Guide Info - Metal-Clad Cable (PJAZ) ( [www.ul.com](http://www.ul.com) )
- IEEE 1202 (70,000 Btu/hr) Vertical Cable Tray Flame Test
- NFPA 70 (National Electrical Code), Article 330
- REACH/RoHS-2 (Chemical Limit) Compliant
- Listed for use in UL 1, 2, and 3 Hour Through-Penetration Fire Stop Systems

## CONSTRUCTION

Southwire Armorlite® MC Cable is constructed with Type THHN/THWN-2 conductors rated 90° C dry, and a bare equipment grounding conductor. Conductors are Alumaflex® Brand AA-8000 series aluminum alloy compact stranded. A binder tape is wrapped over the conductors. Aluminum interlocking armor is applied over the assembly. Conductors also available in High Voltage Colors.

## ARMORLITE® MC CABLE WITH ALUMAFLEX® BRAND TRIPLE E® THHN/THWN-2 CONDUCTORS

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
1/0-3 AL THHN (BLACK/RED/WHITE)	4 ALUMINUM (BARE)	55-87-59-99	602	1.190
1/0-4 AL THHN (BLACK/RED/BLUE/WHITE)	4 ALUMINUM (BARE)	60-52-87-99	758	1.304
2/0-3 AL THHN (BLACK/RED/WHITE)	4 ALUMINUM (BARE)	55-72-07-99	705	1.276
2/0-4 AL THHN (BLACK/RED/BLUE/WHITE)	4 ALUMINUM (BARE)	55-72-56-99	893	1.401
3/0-3 AL THHN (BLACK/RED/WHITE)	4 ALUMINUM (BARE)	55-87-67-99	833	1.38
3/0-4 AL THHN (BLACK/RED/BLUE/WHITE)	4 ALUMINUM (BARE)	60-52-95-99	1138	1.61
4/0-3 AL THHN (BLACK/RED/WHITE)	2 ALUMINUM (BARE)	55-72-15-99	1089	1.59
4/0-4 AL THHN (BLACK/RED/BLUE/WHITE)	2 ALUMINUM (BARE)	55-72-64-99	1374	1.74
250-3 AL THHN (BLACK/RED/WHITE)	2 ALUMINUM (BARE)	55-80-56-99	1275	1.73
250-3 AL THHN (BLACK/RED/WHITE)	1 ALUMINUM (BARE)	55-96-47-99	1292	1.735
250-4 AL THHN (BLACK/RED/BLUE/WHITE)	1 ALUMINUM (BARE)	60-70-69-99	1635	1.91
300-3 AL THHN (BLACK/RED/WHITE)	1 ALUMINUM (BARE)	55-42-78-99	1474	1.84
300-4 AL THHN (BLACK/RED/BLUE/WHITE)	1 ALUMINUM (BARE)	60-79-78-99	1873	2.02
350-3 AL THHN (BLACK/RED/WHITE)	1 ALUMINUM (BARE)	56-05-08-99	1653	1.94
350-4 AL THHN (BLACK/RED/BLUE/WHITE)	1/0 ALUMINUM (BARE)	60-70-77-99	2129	1.84
400-3 AL THHN (BLACK/RED/WHITE)	1 ALUMINUM (BARE)	55-77-73-99	1830	2.04
400-4 AL THHN (BLACK/RED/BLUE/WHITE)	3/0 ALUMINUM (BARE)	55-51-17-99	2420	2.24
500-3 AL THHN (BLACK/RED/WHITE)	1 ALUMINUM (BARE)	55-72-23-99	2177	2.2
500-3 AL THHN (BLACK/RED/WHITE)	2/0 ALUMINUM (BARE)	55-48-47-99	2224	2.202
500-3 AL THHN (BLACK/RED/WHITE)	3/0 ALUMINUM (BARE)	56-35-86-99	2257	2.202
500-3 AL THHN (BLACK/RED/WHITE)	250 ALUMINUM (BARE)	56-12-53-99	2373	2.42
500-4 AL THHN (BLACK/RED/BLUE/WHITE)	3/0 ALUMINUM (BARE)	60-70-85-99	2577	2.42
500-4 AL THHN (BLACK/RED/BLUE/WHITE)	250 ALUMINUM (BARE)	55-27-47-99	2955	2.42
600-3 AL THHN (BLACK/RED/WHITE)	1/0 ALUMINUM (BARE)	60-07-59-99	2608	2.42
600-3 AL THHN (BLACK/RED/WHITE)	400 ALUMINUM (BARE)	56-36-08-99	2930	2.662
600-4 AL THHN (BLACK/RED/BLUE/WHITE)	3/0 ALUMINUM (BARE)	60-70-93-99	3416	2.66
600-4 AL THHN (BLACK/RED/BLUE/WHITE)	400 ALUMINUM (BARE)	55-24-83-99	3684	2.94



## ARMORLITE® MC CABLE WITH ALUMAFLEX® BRAND TRIPLE E® THHN/THWN-2 CONDUCTORS

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
750-3 AL THHN (BLACK/RED/WHITE)	1/0 ALUMINUM (BARE)	55-72-31-99	3118	2.63
750-3 AL THHN (BLACK/RED/WHITE)	3/0 ALUMINUM (BARE)	55-48-49-99	3177	2.63
750-3 AL THHN (BLACK/RED/WHITE)	750 ALUMINUM (BARE)	56-35-99-99	3777	2.891
750-4 AL THHN (BLACK/RED/BLUE/WHITE)	3/0 ALUMINUM (BARE)	60-71-01-99	4089	2.9
750-4 AL THHN (BLACK/RED/BLUE/WHITE)	750 ALUMINUM (BARE)	56-16-02-99	4696	3.2
900-4 AL THHN (BLACK/RED/BLUE/WHITE)	250 ALUMINUM (BARE)	55-98-33-99	4833	3.11
<b>CONDUCTOR COLORS 227/480V</b>				
1/0-3 AL THHN (BROWN/ORANGE/YELLOW)	4 ALUMINUM (BARE)	56-54-27-99	602	1.190
1/0-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	4 ALUMINUM (BARE)	56-33-65-99	758	1.304
2/0-3 AL THHN (BROWN/ORANGE/YELLOW)	4 ALUMINUM (BARE)	56-54-29-99	705	1.276
2/0-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	4 ALUMINUM (BARE)	56-33-74-99	893	1.40
3/0-3 AL THHN (BROWN/ORANGE/YELLOW)	4 ALUMINUM (BARE)	56-28-11-99	833	1.38
3/0-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	4 ALUMINUM (BARE)	55-98-94-99	1138	1.61
4/0-3 AL THHN (BROWN/ORANGE/YELLOW)	2 ALUMINUM (BARE)	56-27-08-99	1089	1.59
4/0-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	2 ALUMINUM (BARE)	55-98-96-99	1374	1.74
250-3 AL THHN (BROWN/ORANGE/YELLOW)	2 ALUMINUM (BARE)	56-28-16-99	1292	1.73
250-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	1 ALUMINUM (BARE)	55-99-04-99	1634	1.9
300-3 AL THHN (BROWN/ORANGE/YELLOW)	1 ALUMINUM (BARE)	56-28-18-99	1474	1.84
300-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	1 ALUMINUM (BARE)	55-99-07-99	1873	2.02
350-3 AL THHN (BROWN/ORANGE/YELLOW)	1 ALUMINUM (BARE)	55-99-07-99	1653	1.942
350-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	1 ALUMINUM (BARE)	56-30-52-99	2129	2.13
400-3 AL THHN (BROWN/ORANGE/YELLOW)	1/0 ALUMINUM (BARE)	55-99-09-99	1910	2.035
400-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	3/0 ALUMINUM (BARE)	56-27-04-99	2420	2.23
500-3 AL THHN (BROWN/ORANGE/YELLOW)	3/0 ALUMINUM (BARE)	55-99-11-99	2224	2.201
500-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	3/0 ALUMINUM (BARE)	60-07-59-99	2877	2.42
600-3 AL THHN (BROWN/ORANGE/YELLOW)	400 ALUMINUM (BARE)	56-36-08-99	2667	2.415
600-3 AL THHN (BROWN/ORANGE/YELLOW)	400 ALUMINUM (BARE)	57-33-66-99	2930	2.662
600-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	3/0 ALUMINUM (BARE)	60-70-93-99	3415	2.66

## ARMORLITE® MC CABLE WITH ALUMAFLEX® BRAND TRIPLE E® THHN/THWN-2 CONDUCTORS

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
600-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	400 ALUMINUM (BARE)	55-24-83-99	3684	2.94
750-3 AL THHN (BROWN/ORANGE/YELLOW)	1/0 ALUMINUM (BARE)	56-30-46-99	3118	2.620
750-3 AL THHN (BROWN/ORANGE/YELLOW)	3/0 ALUMINUM (BARE)	56-54-43-99	3177	2.620
750-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	3/0 ALUMINUM (BARE)	55-99-19-99	4089	2.9
900-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	400 ALUMINUM (BARE)	55-98-66-99	4836	3.11

## FEATURES

- Lightweight aluminum armor--as much as 45% lighter than steel MC Cable.
- Available with Southwire pulling heads and on stacked reels.
- Available in custom constructions and lengths.
- UL Classified 1, 2, and 3 hour Through Penetration Firestop Systems: W-J-3037, W-L-3110, W-L-3113, W-L-3117, W-L-3120, W-L-3121, W-L-3160, C-AJ-3115, C-AJ-3140, C-AJ-3142, C-AJ-3145, C-AJ-3173, C-AJ-3202, C-AJ-4065, C-AJ-4066, F-C-3038.
- Anti-short bushings are not required for use with MC cable per the NEC and UL.

## COLOR CODING, STANDARD PRODUCTS

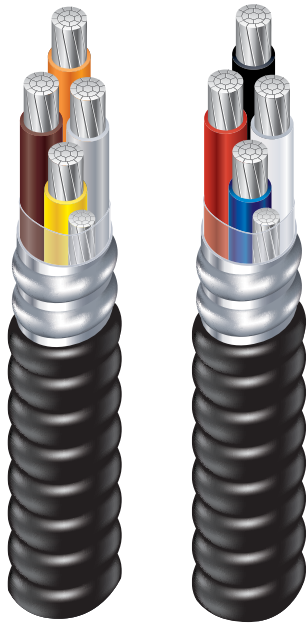
Phase Conductors are Black with Printed I.D.	
No. of Conductors	Color Sequence 120/208Y
3	Black, Red, White
4	Black, Red, Blue, White
Grounding Conductor	Bare

Color sequence for 277V/480Y High Voltage Color systems and other special colors are available subject to economic order quantity.

# ARMORLITE® PVC JACKETED FEEDER MC CABLE

WITH ALUMAFLEX® BRAND TRIPLE E® THHN/THWN-2 CONDUCTORS

1/0 AWG through 900 kcmil Alumaflex® Brand THHN/THWN-2 Insulated Singles with 8000 series Triple E® Aluminum Alloy. Bare Alumaflex® Brand Aluminum Alloy Grounding Conductor. UL Listed. 600 Volts. Lightweight Aluminum Interlocked Armor. Overall PVC Jacket.



High Voltage Colors

Low Voltage Colors



Lightweight Aluminum Interlocked Armor with overall PVC Jacket

600 Volt

Insulated Singles Rated THHN/THWN-2

Bare Alumaflex® Brand Aluminum Alloy Grounding Conductor

Flame Retardant Sunlight Resistant PVC Jacket

## APPLICATIONS

- Suitable for Wet Location per NEC 330.10(11)
- Direct burial applications, installation in concrete and where exposed to cinder fills, strong chlorides, caustic alkalis, or vapors of chlorine or of hydrochloric acids
- Branch, feeder and service power distribution under high ambient temperatures in commercial, industrial, institutional, and multi-residential buildings
- Power, lighting, control, and signal circuits
- Fished or embedded in plaster
- Concealed or exposed installations
- Places of Assembly per NEC® 518.4 and theaters per NEC® 520.5
- As aerial cable on a messenger
- Installation in cable tray and approved raceways
- Under raised floors for information technology equipment conductors and cables per NEC® 645.5(D) & 645.5(D)(2)
- Class I Div. 2, Class II Div. 2, & Class III Div. 1 Hazardous Locations

## STANDARDS & REFERENCES

Southwire Armorlite® PVC Jacketed MC Feeder Cable meets or exceeds the following requirements:

- UL 83
- UL 1569
- UL 1685
- UL Online Product Guide Info - Metal-Clad Cable (PJAZ) ( [www.ul.com](http://www.ul.com) )
- Federal Specification A-A59544 (formerly J-C-30B)
- Jacketed & Non Jacketed will both pass " UL Test" & "FT4/IEEE 1202"(70,000 Btu/hr) Vertical Cable Tray Flame Test
- NFPA 70 (National Electrical Code), Article 330
- Listed for use in UL 1, 2, and 3 Hour Through-Penetration Fire Stop Systems
- REACH/RoHS-2 (Chemical Limit) Compliant

## CONSTRUCTION

Southwire Armorlite® PVC Jacketed MC Feeder Cable is constructed with Alumaflex® Brand Triple e® THHN/THWN-2 conductors rated 90°C wet or dry, and a bare aluminum grounding conductor for sizes 1/0 AWG and larger. The conductors are cabled together and a binder tape is wrapped around the assembly. Aluminum interlocking armor is applied over the assembly. A black flame retardant sunlight resistant PVC jacket is applied over the armor. The jacket is available in other colors upon request, subject to economic order quantities.

**ARMORLITE® PVC JACKETED FEEDER MC CABLE WITH ALUMAFLEX® BRAND TRIPLE E® THHN/THWN-2 CONDUCTORS**

**CONDUCTOR COLORS 120/208V**

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
1/0-3 AL THHN (BLACK/RED/WHITE)	4 ALUMINUM (BARE)	55-25-87-99	716	1.290
1/0-4 AL THHN (BLACK/RED/BLUE/WHITE)	4 ALUMINUM (BARE)	55-42-82-99	883	1.402
2/0-3 AL THHN (BLACK/RED/WHITE)	4 ALUMINUM (BARE)	55-24-65-99	827	1.375
2/0-4 AL THHN (BLACK/RED/BLUE/WHITE)	4 ALUMINUM (BARE)	55-58-07-99	1027	1.5
3/0-3 AL THHN (BLACK/RED/WHITE)	4 ALUMINUM (BARE)	55-24-64-99	964	1.477
3/0-4 AL THHN (BLACK/RED/BLUE/WHITE)	4 ALUMINUM (BARE)	55-49-34-99	1323	1.732
4/0-3 AL THHN (BLACK/RED/WHITE)	2 ALUMINUM (BARE)	55-24-84-99	1271	1.71
4/0-4 AL THHN (BLACK/RED/BLUE/WHITE)	2 ALUMINUM (BARE)	55-42-83-99	1573	1.859
250-3 AL THHN (BLACK/RED/WHITE)	2 ALUMINUM (BARE)	55-56-67-99	1474	1.855
250-3 AL THHN (BLACK/RED/WHITE)	1 ALUMINUM (BARE)	56-38-04-99	1490	1.855
250-4 AL THHN (BLACK/RED/BLUE/WHITE)	1 ALUMINUM (BARE)	55-42-84-99	1851	2.021
300-4 AL THHN (BLACK/RED/BLUE/WHITE)	1 ALUMINUM (BARE)	55-49-35-99	2013	2.14
350-3 AL THHN (BLACK/RED/WHITE)	1 ALUMINUM (BARE)	56-12-48-99	1874	2.062
350-4 AL THHN (BLACK/RED/BLUE/WHITE)	1/0 ALUMINUM (BARE)	55-58-08-99	2371	2.253
400-4 AL THHN (BLACK/RED/BLUE/WHITE)	3/0 ALUMINUM (BARE)	56-07-85-99	2674	2.357
500-3 AL THHN (BLACK/RED/WHITE)	1 ALUMINUM (BARE)	55-58-09-99	2426	2.321
500-3 AL THHN (BLACK/RED/WHITE)	3/0 ALUMINUM (BARE)	56-35-89-99	5809	2.075
500-3 AL THHN (BLACK/RED/WHITE)	250 ALUMINUM (BARE)	56-35-92-99	2718	2.573
500-4 AL THHN (BLACK/RED/BLUE/WHITE)	3/0 ALUMINUM (BARE)	55-49-32-99	3222	2.573
500-4 AL THHN (BLACK/RED/BLUE/WHITE)	250 ALUMINUM (BARE)	56-08-04-99	3300	2.573
600-3 AL THHN (BLACK/RED/WHITE)	1/0 ALUMINUM (BARE)	55-58-10-99	2951	2.565
600-3 AL THHN (BLACK/RED/WHITE)	400 ALUMINUM (BARE)	56-37-55-99	3308	2.812
600-4 AL THHN (BLACK/RED/BLUE/WHITE)	3/0 ALUMINUM (BARE)	55-58-11-99	3793	2.812
600-4 AL THHN (BLACK/RED/BLUE/WHITE)	400 ALUMINUM (BARE)	56-07-82-99	2674	3.10
750-3 AL THHN (BLACK/RED/WHITE)	1/0 ALUMINUM (BARE)	55-58-12-99	3490	2.77
750-3 AL THHN (BLACK/RED/WHITE)	3/0 ALUMINUM (BARE)	56-36-06-99	3549	2.77

**ARMORLITE® PVC JACKETED FEEDER MC CABLE WITH ALUMAFLEX® BRAND TRIPLE E® THHN/THWN-2 CONDUCTORS**

**CONDUCTOR COLORS 120/208V**

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
750-4 AL THHN (BLACK/RED/BLUE/WHITE)	3/0 ALUMINUM (BARE)	55-49-33-99	4499	3.045
750-4 AL THHN (BLACK/RED/BLUE/WHITE)	750 ALUMINUM (BARE)	56-36-03-99	5210	3.37
900-4 AL THHN (BLACK/RED/BLUE/WHITE)	250 ALUMINUM (BARE)	56-07-88-99	5337	3.281

**CONDUCTOR COLORS 227/480V**

3/0-3 AL THHN (BROWN/ORANGE/GRAY)	4 ALUMINUM (BARE)	55-24-64-99	964	1.477
3/0-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	4 ALUMINUM (BARE)	55-49-34-99	1323	1.732
4/0-3 AL THHN (BROWN/ORANGE/GRAY)	2 ALUMINUM (BARE)	55-24-84-99	1271	1.71
4/0-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	2 ALUMINUM (BARE)	55-42-83-99	1573	1.859
250-3 AL THHN (BROWN/ORANGE/GRAY)	2 ALUMINUM (BARE)	55-56-67-99	1474	1.855
250-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	1 ALUMINUM (BARE)	56-38-04-99	1490	1.855
300-3 AL THHN (BROWN/ORANGE/GRAY)	1 ALUMINUM (BARE)	55-42-84-99	1851	2.021
300-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	1 ALUMINUM (BARE)	55-49-35-99	2013	2.14
350-3 AL THHN (BROWN/ORANGE/GRAY)	1 ALUMINUM (BARE)	56-12-48-99	1874	2.062
350-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	1/0 ALUMINUM (BARE)	55-58-08-99	2371	2.253
400-3 AL THHN (BROWN/ORANGE/YELLOW)	3/0 ALUMINUM (BARE)	59-14-35-99	2674	2.357
400-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	3/0 ALUMINUM (BARE)	56-07-68--99	2426	2.321
500-3 AL THHN (BROWN/ORANGE/GRAY)	1 ALUMINUM (BARE)	58-49-70-99	5809	2.389
500-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	3/0 ALUMINUM (BARE)	56-07-67-99	2718	2.573
600-3 AL THHN (BROWN/ORANGE/YELLOW)	3/0 ALUMINUM (BARE)	55-49-32-99	3222	2.573
600-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	3/0 ALUMINUM (BARE)	56-08-04-99	3300	2.573
600-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	400 ALUMINUM (BARE)	55-58-10-99	2951	2.565
600-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	750 ALUMINUM (BARE)	56-37-55-99	3308	2.812
750-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	3/0 ALUMINUM (BARE)	55-58-11-99	3793	2.812
900-4 AL THHN (BROWN/ORANGE/YELLOW/GRAY)	250 ALUMINUM (BARE)	56-07-82-99	2674	3.10

For allowable ampacities, refer to NEC 310.15.

# ARMORLITE® PVC JACKETED FEEDER MC CABLE WITH ALUMAFLEX® BRAND TRIPLE E® THHN/THWN-2 CONDUCTORS

## **FEATURES**

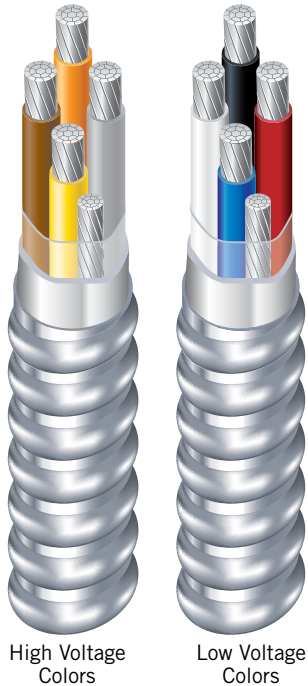
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- Available with Southwire pulling heads and on stacked reels.
- Available in custom constructions and lengths.
- UL Classified 1, 2, and 3 hour Through Penetration Firestop Systems: W-J-3037, W-L-3110, W-L-3113, W-L-3117, W-L-3120, W-L-3121, W-L-3160, C-AJ-3115, C-AJ-3140, C-AJ-3142, C-AJ-3145, C-AJ-3173, C-AJ-3202, C-AJ-4065, C-AJ-4066, F-C-3038.
- Anti-short bushings are not required for use with MC cable per the NEC and UL.

# ARMORLITE® RISER MC™ HIGH RISE CABLE

## WITH ALUMAFLEX® BRAND TRIPLE E® THHN/THWN-2 CONDUCTORS

1/0 AWG through 900 kcmil Alumaflex® Brand THHN/THWN-2 Insulated Singles with 8000 series Triple E® Aluminum Alloy. Bare Alumaflex® Brand Aluminum Alloy Grounding Conductor. UL Listed. 600 Volts. Binder Jacket for Continuous Conductor Support. Lightweight Aluminum Interlocked Armor.



Lightweight Aluminum Interlocked Armor

600 Volt

Insulated Singles Rated THHN/THWN-2

Bare Alumaflex® Brand Aluminum Alloy Grounding Conductor

### APPLICATIONS Suitable for use as follows:

- Riser Cable, vertical applications
- Branch, feeder and service power distribution in commercial, industrial, institutional, and multi-residential buildings.
- Power, lighting, control and signal circuits
- Fished or embedded in plaster
- Concealed or exposed installations
- Environmental air-handling spaces per NEC® 300.22(C)
- Places of Assembly per NEC® 518.4 and theaters per NEC® 520.5
- Installation in cable tray and approved raceways
- Under raised floors for information technology equipment conductors and cables per NEC® 645.5(D) & 645.5(D)(2)

### STANDARDS & REFERENCES

Southwire Armorlite® Riser MC™ High Rise Cable meets or exceeds the requirements of:

- UL 83
- UL 1569
- UL 1685
- ICEA S-95-658 (NEMA WC70)
- Federal Specification A-A59544 (formerly J-C-30B)
- FT4/IEEE 1202 (70,000 Btu/hr)
- NFPA 70 (National Electrical Code), Article 330
- Listed for use in UL 1, 2, and 3 Hour Through-Penetration Fire Stop Systems
- REACH/RoHS-2 (Chemical Limit) Compliant

### CONSTRUCTION

Southwire Armorlite® Riser MC™ High Rise Cable is constructed with Type THHN/THWN-2 conductors and a bare equipment grounding conductor. Conductors are Alumaflex® Brand 8000 series aluminum alloy compact stranded. A binder tape is wrapped over the conductors and an integral polymeric binder jacket is applied under armor for continuous conductor support. Aluminum interlocking armor is applied snugly over the assembly. An optional overall PVC Jacket can be applied over the armor.

**ARMORLITE® RISER MC™ HIGH RISE CABLE WITH ALUMAFLEX® BRAND TRIPLE E® THHN/THWN-2 CONDUCTORS**

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
1-4 AL (BLACK/WHITE/RED/BLUE)	4 ALUMINUM (BARE)	59-75-42-99	970	1.615
1/0-4 AL (BROWN/ORANGE/YELLOW/GRAY)	4 ALUMINUM (GREEN)	58-34-62-99	1165	1.820
2/0-3 AL (BLACK/WHITE/RED)	4 ALUMINUM (GREEN)	58-37-66-99	1070	1.695
2/0-4 AL (BLACK/WHITE/RED/BLUE)	4 ALUMINUM (BARE)	59-62-79-99	1245	1.770
3/0-3 AL (BLACK/WHITE/RED)	4 ALUMINUM (GREEN)	58-39-13-99	1230	1.865
3/0-4 AL (BLACK/WHITE/RED/BLUE)	4 ALUMINUM (BARE)	59-33-49-99	1505	2.035
4/0-3 AL (BLACK/WHITE/RED)	2 ALUMINUM (GREEN)	58-39-17-99	1445	1.945
4/0-4 AL (BROWN/ORANGE/YELLOW/GRAY)	1 ALUMINUM (GREEN)	58-18-69-01	1805	2.160
250-3 AL (BROWN/ORANGE/YELLOW)	1 ALUMINUM (BARE)	58-06-37-99	1650	1.995
250-4 AL (BROWN/ORANGE/YELLOW/GRAY)	1 ALUMINUM (BARE)	56-52-12-99	1995	2.160
350-4 AL (BLACK/WHITE/RED/BLUE)	1/0 ALUMINUM (BARE)	56-11-35-99	2540	2.445
400-4 AL (BROWN/ORANGE/YELLOW/GRAY)	3/0 ALUMINUM (BARE)	58-06-34-99	2845	2.500
500-4 AL (BROWN/ORANGE/YELLOW/GRAY)	3/0 ALUMINUM (GREEN)	56-49-42-99	3340	2.685
600-4 AL (BLACK/WHITE/RED/BLUE)	3/0 ALUMINUM (GREEN)	58-65-44-99	4035	3.070
750-3 AL (BROWN/ORANGE/YELLOW)	3/0 ALUMINUM (BARE)	56-27-00-99	3690	2.880
750-4 AL (BLACK/WHITE/RED/BLUE)	3/0 ALUMINUM (BARE)	56-11-37-99	4640	3.160

\* Available with oversize grounding conductors and other constructions upon request.

\*\* For allowable ampacities, refer to NEC 310.15

## FEATURES

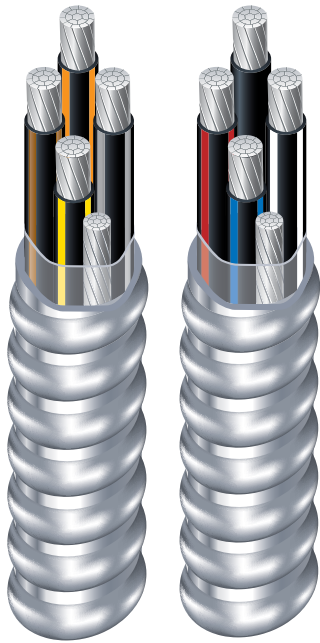
- Ideal for use in vertical high rise applications
- Available in custom constructions and lengths.
- Available with aluminum or copper THHN or XHHW conductors.
- Available in custom constructions and lengths.
- Polymeric binder jacket over the conductors provides continuous conductor support.
- Available with Southwire pulling heads and on stacked reels.



# ARMORLITE® MC CABLE

## WITH ALUMAFLEX® BRAND TRIPLE E® XHHW-2 CONDUCTORS

1/0 AWG through 900 kcmil Alumaflex® Brand XHHW-2 Insulated Singles with 8000 series Triple E® Aluminum Alloy. Bare Alumaflex® Brand Aluminum Alloy Grounding Conductor. UL Listed. 600 Volts. Lightweight Aluminum Interlocked Armor.



High Voltage  
Colors

Low Voltage  
Colors



Lightweight Aluminum  
Interlocked Armor

600 Volt

Insulated Singles  
Rated XHHW-2

Bare Alumaflex®  
Brand Aluminum Alloy  
Grounding Conductor

### APPLICATIONS Suitable for use as follows:

- Suitable for Wet Location per NEC 330.10(11)
- Direct burial applications, installation in concrete and where exposed to cinder fills, strong chlorides, caustic alkalis, or vapors of chlorine or of hydrochloric acids.
- Branch, feeder and service power distribution in commercial, industrial, institutional, and multi-residential buildings.
- Power, lighting, control and signal circuits
- Fished or embedded in plaster
- Concealed or exposed installations.
- Places of Assembly per NEC® 518.4 and theaters per NEC® 520.5
- As aerial cable on a messenger.
- Installation in cable tray and approved raceways
- Under raised floors for information technology equipment conductors and cables per NEC® 645.5(D) & 645.5(D)(2)
- Class I Div. 2, Class II Div. 2, & Class III Div. 1 Hazardous Locations

### STANDARDS & REFERENCES

Southwire Armorlite® MC Cable meets or exceeds the requirements:

- UL 44
- UL 1569
- UL Online Product Guide Info - Metal-Clad Cable (PJAZ) ( [www.ul.com](http://www.ul.com) )
- ICEA S-95-658 (NEMA WC70)
- Federal Specification A-A59544 (formerly J-C-30B)
- IEEE 1202 (70,000 Btu/hr) Vertical Cable Tray Flame Test
- NFPA 70 (National Electrical Code), Article 330
- REACH/RoHS-2 (Chemical Limit) Compliant
- Listed for use in UL 1, 2, and 3 Hour Through-Penetration Fire Stop Systems

### CONSTRUCTION

Southwire Armorlite® MC Cable is constructed with Type XHHW-2 conductors rated 90°C wet or dry, and a bare equipment grounding conductor. Conductors are Alumaflex® Brand AA-8000 series aluminum alloy compact stranded. A binder tape is wrapped over the conductors. Aluminum interlocking armor is applied over the assembly. A PVC Jacket is applied over the armor.

## ARMORLITE® MC CABLE WITH ALUMAFLEX® BRAND TRIPLE E® XHHW-2 CONDUCTORS

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
6-3 STRANDED XHHW (BLACK/BLACK-WHITE/BLACK-RED)	6 STRANDED (BARE)	55-96-94-99	305	.884
6-4 STRANDED XHHW (BLACK/BLACK-BLUE/ BLACK-WHITE/BLACK-RED)	6 STRANDED (BARE)	56-07-78-99	372	.951
4-3 STRANDED XHHW (BLACK/BLACK-WHITE/BLACK-RED)	6 STRANDED (BARE)	55-40-13-99	395	1.056
4-4 STRANDED XHHW (BLACK/BLACK-BLUE/ BLACK-WHITE/BLACK-RED)	6 STRANDED (BARE)	56-07-81-99	452	1.049
2-3 STRANDED XHHW (BLACK/BLACK-WHITE/BLACK-RED)	4 STRANDED (BARE)	55-42-80-99	523	1.189
2-4 STRANDED XHHW (BLACK/BLACK-BLUE/ BLACK-WHITE/BLACK-RED)	4 STRANDED (BARE)	56-07-80-99	607	1.182
1-3 STRANDED XHHW (BLACK/BLACK-WHITE/BLACK-RED)	4 STRANDED (BARE)	55-42-81-99	594	1.201
1-4 STRANDED XHHW (BLACK/BLACK-BLUE/ BLACK-WHITE/BLACK-RED)	4 STRANDED (BARE)	55-25-95-99	735	1.313

For allowable ampacities, refer to NEC 310.15.  
 Available with oversized grounding conductor when used for parallel feeds on special orders.  
 Available in sizes up to 900 MCM

## FEATURES

- UL Classified 1, 2, and 3 hour Through Penetration Firestop Systems: W-J-3037, W-L-3110, W-L-3113, W-L-3117, W-L-3120, W-L-3121, W-L-3160, C-AJ-3115, C-AJ-3140, C-AJ-3142, C-AJ-3145, C-AJ-3173, C-AJ-3202, C-AJ-4065, C-AJ-4066, F-C-3038.
- Anti-short bushings are not required for use with MC cable per the NEC and UL.

Phase Conductors are Black with Three Extruded Color Stripes

## COLOR CODING

No. of Conductors	Color Sequence 120/208Y
3	Black, Red Striped, and White Striped
4	Black, Red Striped, Blue Striped, White Striped
Grounding Conductor	Bare

# ARMORLITE® PVC JACKETED MC CABLE

## WITH ALUMAFLEX® BRAND TRIPLE E® XHHW-2 CONDUCTORS

6 AWG through 900 kcmil XHHW-2 Insulated Singles with 8000 Series Triple E® Aluminum Alloy. Bare Alumaflex® Brand Aluminum Alloy Grounding Conductor. UL Listed. 600 Volts. Lightweight Aluminum Interlocked Armor with Overall PVC Jacket.



Lightweight Aluminum  
Interlocked Armor

600 Volt

Cross-linked  
Polyethylene (XLP)  
Insulated Singles  
Rated XHHW-2

Bare Alumaflex®  
Brand Aluminum Alloy  
Grounding Conductor

### APPLICATIONS Suitable for use as follows:

- Suitable for Wet Location per NEC 330.10(11)
- Direct burial applications, installation in concrete and where exposed to cinder fills, strong chlorides, caustic alkalis, or vapors of chlorine or of hydrochloric acids.
- Branch, feeder and service power distribution in commercial, industrial, institutional, and multi-residential buildings.
- Power, lighting, control and signal circuits
- Fished or embedded in plaster
- Concealed or exposed installations
- Places of Assembly per NEC® 518.4 and theaters per NEC® 520.5
- Installation in cable tray and approved raceways
- Under raised floors for information technology equipment conductors and cables per NEC® 645.5(D) & 645.5(D)(2)
- Class I Div. 2, Class II Div. 2, & Class III Div. 1 Hazardous Locations

### STANDARDS & REFERENCES

Southwire Armorlite® PVC Jacketed MC Cable meets or exceeds the requirements:

- UL 44
- UL 1569
- UL 1685
- UL Online Product Guide Info - Metal-Clad Cable (PJAZ) ( [www.ul.com](http://www.ul.com) )
- ICEA S-95-658 (NEMA WC70)
- Federal Specification A-A59544 (formerly J-C-30B)
- IEEE 1202 (70,000 Btu/hr) Vertical Cable Tray Flame Test
- NFPA 70 (National Electrical Code), Article 330
- Listed for use in UL 1, 2, and 3 Hour Through-Penetration Fire Stop Systems
- REACH/RoHS-2 (Chemical Limit) Compliant

### CONSTRUCTION

Southwire Armorlite® PVC Jacketed MC Cable is constructed with Type XHHW-2 conductors rated 90°C wet or dry, and a bare equipment grounding conductor. Conductors are Alumaflex® Brand AA-8000 series aluminum alloy compact stranded. A binder tape is wrapped over the conductors. Aluminum interlocking armor is applied over the assembly. A PVC Jacket is applied over the armor.

## ARMORLITE® PVC JACKETED MC CABLE WITH ALUMAFLEX® BRAND TRIPLE E® XHHW-2 CONDUCTORS

### SOLID CONDUCTOR COLORS 120/208V

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
6-3 STRANDED XHHW (BLACK/BLACK-WHITE/ BLACK-RED)	6 STRANDED (BARE)	55-96-94-99	305	.884
6-3 STRANDED XHHW (BLACK/BLACK-WHITE/BLACK-RED)	6 STRANDED (BARE)	55-96-94-99	372	.951
6-3 STRANDED XHHW (BLACK/BLACK-WHITE/BLACK-RED)	6 STRANDED (BARE)	55-96-94-99	395	1.056
4-4 STRANDED XHHW (BLACK/BLACK-BLUE/ BLACK-WHITE/BLACK-RED)	6 STRANDED (BARE)	55-96-94-99	452	1.049
4-4 STRANDED XHHW (BLACK/BLACK-BLUE/ BLACK-WHITE/BLACK-RED)	4 STRANDED (BARE)	55-96-94-99	523	1.189
4-4 STRANDED XHHW (BLACK/BLACK-BLUE/ BLACK-WHITE/BLACK-RED)	4 STRANDED (BARE)	55-96-94-99	607	1.182
4-4 STRANDED XHHW (BLACK/BLACK-BLUE/ BLACK-WHITE/BLACK-RED)	4 STRANDED (BARE)	55-96-94-99	594	1.201
4-4 STRANDED XHHW (BLACK/BLACK-BLUE/ BLACK-WHITE/BLACK-RED)	4 STRANDED (BARE)	55-25-95-99	735	1.313

For allowable ampacities, refer to NEC 310.15.  
Available with oversized grounding conductor when used for parallel feeds on special orders.  
Available in sizes up to 900 MCM

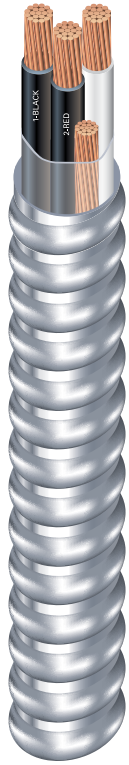
## FEATURES

- UL Classified 1, 2, and 3 hour Through Penetration Firestop Systems: W-J-3037, W-L-3110, W-L-3113, W-L-3117, W-L-3120, W-L-3121, W-L-3160, C-AJ-3115, C-AJ-3140, C-AJ-3142, C-AJ-3145, C-AJ-3173, C-AJ-3202, C-AJ-4065, C-AJ-4066, F-C-3038.
- Anti-short bushings are not required for use with MC cable per the NEC and UL.

## COLOR CODING, STANDARD PRODUCTS

Phase Conductors are Black with Printed I.D.	
No. of Conductors	Color Sequence 120/208Y
3	Black, Red Striped, and White Striped
4	Black, Red Striped, Blue Striped, White Striped
Grounding Conductor	Bare

Color sequence for 277V/480Y High Voltage Color systems and other special colors are available subject to economic order quantity.



# ARMORLITE® FEEDER MC CABLE WITH COPPER CONDUCTORS

1 AWG through 750 kcmil Copper THHN/THWN-2 Insulated Singles. Copper Grounding Conductor. UL Listed. 600 Volts. Rated VW-1. Lightweight Aluminum Interlocked Armor.

## APPLICATIONS Suitable for use as follows:

- Feeder and service power distribution in commercial, industrial, institutional, and multi-residential buildings
- Fished or embedded in plaster
- Concealed or exposed installations
- Environmental air-handling spaces per NEC® 300.22(C)
- Places of Assembly per NEC® 518.4 and theaters per NEC® 520.5
- Installation in cable tray and approved raceways
- Under raised floors for information technology equipment conductors and cables per NEC® 645.5(D) & 645.5(D)(2)
- Class I Div. 2, Class II Div. 2, & Class III Div. 1 Hazardous Locations

## STANDARDS & REFERENCES

Southwire Armorlite® MC Cable meets or exceeds the following requirements:

- UL 83
- UL 1569
- UL 1685
- UL Online Product Guide Info - Metal-Clad Cable (PJAZ) ( [www.ul.com](http://www.ul.com) )
- Federal Specification A-A59544 (formerly J-C-30B)
- Jacketed & Non Jacketed will both pass "UL Test" & "FT4/IEEE 1202" (70,000 Btu/hr) Vertical Cable
- Tray Flame Test
- NFPA 70 (National Electrical Code), Article 330
- Listed for use in UL 1, 2, and 3 Hour Through-Penetration Fire Stop Systems
- REACH/RoHS-2 (Chemical Limit) Compliant

## CONSTRUCTION

Southwire Armorlite® MC Cable is constructed with soft-drawn copper, Type THHN/THWN-2 conductors rated 90°C dry, and a bare copper grounding conductor for sizes 1/0 AWG and larger. The conductors are cabled together and a binder tape bearing the print legend is wrapped around the assembly. Aluminum interlocking armor is applied over the assembly. Also available in steel. Conductors are black with phase identification. Colors available upon request with economic order quantity.

**Copper Power Feeder  
Conductors**

**Lightweight Aluminum  
Interlocked Armor**

**600 Volt**

**THHN/THWN-2  
Insulated Singles**

**Bare Copper Grounding  
Conductor**

**Sizes 1 AWG through  
750 kcmil**

## ARMORLITE® FEEDER MC CABLE WITH COPPER CONDUCTORS

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
1-3 STRANDED (PHASE ID: BLACK/WHITE/ PHASE ID: RED)	6 STRANDED (GREEN)	89-03-47-99	1139	1.203
1-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	6 STRANDED (GREEN)	89-03-55-99	1460	1.351
1/0-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	6 STRANDED (BARE)	89-03-48-99	1347	1.245
1/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	6 STRANDED (BARE)	89-03-56-99	1737	1.362
2/0-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	6 STRANDED (BARE)	89-03-49-99	1633	1.339
2/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	6 STRANDED (BARE)	89-03-57-99	2190	1.571
3/0-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	4 STRANDED (BARE)	89-03-94-99	2040	1.449
3/0-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	3 STRANDED (BARE)	56-10-31-99	2074	1.449
3/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	4 STRANDED (BARE)	89-03-95-99	2720	1.694
3/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	3 STRANDED (BARE)	56-10-32-99	2757	1.716
4/0-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	4 STRANDED (BARE)	89-03-51-99	2562	1.665
4/0-3 STRANDED (PHASE ID: BLACK/WHITE/ PHASE ID: RED)	4 STRANDED (BARE)	56-10-33-99	2638	1.67
4/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	4 STRANDED (BARE)	89-03-59-99	3313	1.824
4/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	2 STRANDED (BARE)	56-10-34-99	3396	1.857
250-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	4 STRANDED (BARE)	89-03-52-99	2991	1.817
250-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	4 STRANDED (BARE)	89-03-60-99	3880	1.993
350-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	3 STRANDED (BARE)	89-03-53-99	4041	2.040
350-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	3 STRANDED (BARE)	89-03-61-99	5261	2.242
350-3 STRANDED (PHASE ID: BLACK/WHITE/ PHASE ID: RED)	3/0 STRANDED (BARE)	56-41-92-99	4435	2.242
350-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	3/0 STRANDED (BARE)	56-87-10-99	5645	2.388
500-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	2 STRANDED (BARE)	89-03-54-99	5589	2.319

## ARMORLITE® FEEDER MC CABLE WITH COPPER CONDUCTORS

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
500-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	2 STRANDED (BARE)	89-03-62-99	7305	2.557
500-3 STRANDED (PHASE ID: BLACK/WHITE/ PHASE ID: RED)	1/0 STRANDED (BARE)	56-41-98-99	5715	2.318
500-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	1/0 STRANDED (BARE)	56-42-02-99	7426	2.554
500-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	250 STRANDED (BARE)	56-13-75-99	6201	2.553
500-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	250 STRANDED (BARE)	56-41-96-99	7921	2.818
600-4 STRANDED (PHASE ID: BLACK/WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	2 STRANDED (BARE)	55-20-88-99	8685	2.794
750-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	4/0 STRANDED (BARE)	55-51-47-99	8572	2.754
750-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	1/0 STRANDED (BARE)	55-04-53-99	10,779	3.040

For allowable ampacities, refer to NEC 310.15.  
Available with oversized grounding conductor when used for parallel feeds on special orders.  
Connectors may require upsizing to accommodate armor looseness after cutting.

## FEATURES

- Available with Southwire pulling heads and on stacked reels.
- Available in custom constructions and lengths.
- UL Classified 1, 2, and 3 hour Through Penetration Firestop Systems: W-J-3037, W-L-3110, W-L-3113, W-L-3117, W-L-3120, W-L-3121, W-L-3160, C-AJ-3115, C-AJ-3140, C-AJ-3142, C-AJ-3145, C-AJ-3173, C-AJ-3202, C-AJ-4065, C-AJ-4066, F-C-3038.
- Anti-short bushings are not required for use with MC cable per the NEC and UL.

## COLOR CODING, STANDARD PRODUCTS

Phase Conductors are Black with Printed I.D.	
No. of Conductors	Color Sequence 120/208
3	Phase ID: Black, Red, White
4	Phase ID: Black, Red, Blue, White
Grounding Conductor	Bare

Color sequence for 277V/480Y High Voltage Color systems and other special colors are available subject to economic order quantity.



# ARMORLITE® PVC JACKETED MC CABLE WITH COPPER CONDUCTORS

**1 AWG through 750 kcmil Copper THHN/THWN-2 Insulated Power Feeder Conductors. Bare Copper Grounding Conductor. UL Listed. 600 Volts. Rated VW-1. Lightweight Aluminum Interlocked Armor with Overall PVC Jacket.**

## APPLICATIONS

- Suitable for Wet Location per NEC 330.10(11)
- Direct burial applications, installation in concrete and where exposed to cinder fills, strong chlorides, caustic alkalis, or vapors of chlorine or of hydrochloric acids
- Branch, feeder and service power distribution in commercial, industrial, institutional, and multi-residential buildings
- Fished or embedded in plaster
- Concealed or exposed installations
- Places of Assembly per NEC® 518.4 and theaters per NEC® 520.5
- As aerial cable on a messenger
- Installation in cable tray and approved raceways
- Under raised floors for information technology equipment conductors and cables per NEC® 645.5(D) & 645.5(D)(2)
- Class I Div. 2, Class II Div. 2, & Class III Div. 1 Hazardous Locations

## STANDARDS & REFERENCES

Southwire Armorlite® PVC Jacketed MC Cable meets or exceeds the following requirements:

- UL 83
- UL 1569
- UL 1685
- UL Online Product Guide Info - Metal-Clad Cable (PJAZ) ( [www.ul.com](http://www.ul.com) )
- Federal Specification A-A59544 (formerly J-C-30B)
- Jacketed & Non Jacketed will both pass “ UL Test” & “FT4/IEEE 1202” (70,000 Btu/hr) Vertical Cable Tray Flame Test
- NFPA 70 (National Electrical Code), Article 330
- Listed for use in UL 1, 2, and 3 Hour Through-Penetration Fire Stop Systems
- REACH/RoHS-2 (Chemical Limit) Compliant

## CONSTRUCTION

Southwire Armorlite® PVC Jacketed MC Cable is constructed with soft-drawn, copper Type THHN/THWN-2 conductors rated 90°C, and a bare copper grounding conductor for sizes 1/0 AWG and larger. The conductors are cabled together and a binder tape is wrapped around the assembly. Aluminum interlocking armor is applied over the assembly. A black, flame retardant, sunlight resistant, PVC jacket is applied over the armor. Print legend is applied to the binder tape as well as the overall PVC jacket. The jacket is available in blue or gray colors upon request, subject to economic order quantities.

Copper Power Feeder  
Conductors

Lightweight Aluminum  
Interlocked Armor

Overall PVC Jacket

600 Volt

THHN/THWN Insulated  
Singles

Bare Copper Grounding  
Conductor

Sizes 1 AWG through  
1000 kcmil

Flame Retardant  
Sunlight Resistant  
PVC Jacket



## ARMORLITE® PVC JACKETED MC CABLE WITH COPPER CONDUCTORS

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
1-3 STRANDED (PHASE ID: BLACK/WHITE/ PHASE ID: RED)	6 STRANDED (GREEN)	55-42-93-99	1255	1.303
1-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	6 STRANDED (GREEN)	55-56-69-99	1588	1.451
1/0-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	6 STRANDED (BARE)	55-42-86-99	1466	1.342
1/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	6 STRANDED (BARE)	55-42-90-99	1867	1.462
2/0-3 STRANDED (PHASE ID: BLACK/WHITE/ PHASE ID: RED)	6 STRANDED (BARE)	55-42-90-99	1761	1.439
2/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	6 STRANDED (BARE)	55-42-90-99	2370	1.691
3/0-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	4 STRANDED (BARE)	55-42-90-99	2178	1.549
3/0-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	3 STRANDED (BARE)	55-42-90-99	2213	1.549
3/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	4 STRANDED (BARE)	55-42-90-99	2914	1.814
3/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	3 STRANDED (BARE)	55-42-90-99	2948	1.814
4/0-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	4 STRANDED (BARE)	55-42-90-99	2752	1.786
4/0-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	4 STRANDED (BARE)	55-42-90-99	3521	1.944
250-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	4 STRANDED (BARE)	55-58-03-99	3198	1.937
250-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	4 STRANDED (BARE)	55-30-34-99	4107	2.113
350-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	3 STRANDED (BARE)	55-30-34-99	4273	2.160
350-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	3/0 STRANDED (BARE)	55-30-34-99	4689	2.362
350-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	3 STRANDED (BARE)	55-30-34-99	5516	2.362
350-4 STRANDED (PHASE ID: BLACK/ WHITE/ PHASE ID: RED/ PHASE ID: BLUE)	3/0 STRANDED (BARE)	55-30-34-99	5985	2.538
500-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	2 STRANDED (BARE)	55-30-34-99	5919	2.468
500-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	250 STRANDED (BARE)	55-30-34-99	6568	2.703
500-3 STRANDED (PHASE ID: BLACK/WHITE/PHASE ID: RED)	1/0 STRANDED (BARE)	55-30-34-99	6045	2.468

# ARMORLITE® PVC JACKETED MC CABLE WITH COPPER CONDUCTORS

## FEATURES

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- Available with Southwire pulling heads and on stacked reels.
- Available in custom constructions and lengths.
- UL Classified 1, 2, and 3 hour Through Penetration Firestop Systems: W-J-3037, W-L-3110, W-L-3113, W-L-3117, W-L-3120, W-L-3121, W-L-3160, C-AJ-3115, C-AJ-3140, C-AJ-3142, C-AJ-3145, C-AJ-3173, C-AJ-3202, C-AJ-4065, C-AJ-4066, F-C-3038.
- Anti-short bushings are not required for use with MC cable per the NEC and UL.

## COLOR CODING, STANDARD PRODUCTS

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Phase Conductors are Black with Printed I.D.	
No. of Conductors	Color Sequence 120/208Y
3	Black, Red, White
4	Black, Red, Blue, White
Grounding Conductor	Bare

Color sequence for 277V/480Y High Voltage Color systems and other special colors are available subject to economic order quantity.



# ARMORLITE® RISER MC™ HIGH RISE CABLE WITH COPPER THHN/THWN-2 CONDUCTORS

1/0 AWG through 750 kcmil Copper THHN/THWN-2 Insulated Singles. Bare Copper Grounding Conductor. UL Listed. 600 Volts. Lightweight Aluminum Interlocked Armor.

## APPLICATIONS Suitable for use as follows:

- Riser Cable, vertical applications
- Branch, feeder and service power distribution under high ambient temperatures in commercial, industrial, institutional, and multi-residential buildings
- Power, lighting, control and signal circuits
- Fished or embedded in plaster
- Concealed or exposed installations
- Places of Assembly per NEC® 518.4 and theaters per NEC® 520.5
- Installation in cable tray and approved raceways
- Under raised floors for information technology equipment conductors and cables per NEC® 645.5(D) & 645.5(D)(2)

## STANDARDS & REFERENCES

Southwire Armorlite® Riser MC™ High Rise Cable meets or exceeds the requirements of:

- UL 83
- UL 1569
- UL 1685
- ICEA S-95-658 (NEMA WC70)
- Federal Specification A-A59544 (formerly J-C-30B)
- FT4/IEEE 1202 (70,000 Btu/hr)
- NFPA 70 (National Electrical Code), Article 330
- Listed for use in UL 1, 2, and 3 Hour Through-Penetration Fire Stop Systems
- REACH/RoHS-2 (Chemical Limit) Compliant

## CONSTRUCTION

Southwire Armorlite® Riser MC™ High Rise Cable is constructed with Type THHN/THWN-2 conductors and a bare equipment grounding conductor. A binder tape is wrapped over the conductors and an integral polymeric binder jacket is applied under armor for continuous conductor support. Aluminum interlocking armor is applied snugly over the assembly. An optional overall PVC Jacket can be applied over the armor.

Type MC  
250 - 750 kcmil  
Copper

600 Volt

THHN Insulated Singles

Bare Copper  
Grounding Conductor

## ARMORLITE® RISER MC™ HIGH RISE CABLE WITH COPPER THHN/THWN-2 CONDUCTORS

CONDUCTOR SIZE AND COLORS	GROUNDING SIZE AND COLOR	STOCK NUMBER	WEIGHT (lbs/1000 ft)	OVERALL DIAMETER (INCHES)
1-3 CU THHN (BLACK/RED/WHITE)	1 COPPER (BARE)	58-77-07-99	1653	1.693
1-3 CU THHN (BLACK/RED/WHITE)	3 COPPER (BARE)	58-77-05-99	1902	1.818
1-3 CU THHN (BLACK/RED/WHITE)	3/0 COPPER (BARE)	58-77-06-99	2836	1.939
1-3 CU THHN (BLACK/RED/WHITE)	2 COPPER (BARE)	64-36-45-99	3186	2.089
1-3 CU THHN (BLACK/RED/WHITE)	4/0 COPPER (BARE)	58-77-10-99	4262	2.318
1-3 CU THHN (BLACK/RED/WHITE)	4 COPPER (BARE)	64-35-66-99	3329	2.067
1-3 CU THHN (BLACK/RED/WHITE)	4/0 COPPER (BARE)	59-80-48-99	7028	2.853
1-3 CU THHN (BLACK/RED/WHITE)	2 COPPER (BARE)	58-67-33-99	9192	3.04
1-3 CU THHN (BLACK/RED/WHITE)	3/0 COPPER (BARE)	64-36-48-99	9567	3.04
1-3 CU THHN (BLACK/RED/WHITE)	1/0 COPPER (BARE)	59-77-79-99	8739	3.0

\* Available with oversize grounding conductors and other constructions upon request.

\*\* For allowable ampacities, refer to NEC 310.15

## FEATURES

- Ideal for use in vertical high rise applications.
- Available with THHN or XHHW conductors.
- Available in custom constructions and lengths.
- Polymeric binder jacket over the conductors provides continuous conductor support.
- Available with Southwire pulling heads and on stacked reels.
- Compatible with any fittings and clamps rated for use with standard Type MC.

NEC® TABLE 310.15 (B)(16) ALLOWABLE AMPACITIES FOR 600V CONDUCTORS			
SIZE AWG OR KCMIL	60°C (140°F)	75°C (167°F)	90°C (194°F)
	TYPES TW, UF	TYPES RHW, THHW, THW, THWN, XHHW, USE, ZW	TYPES: TBS, SA, SIS, RHH, RHW-2, THHN, THHW, THW-2, THWN-2, USE-2, XHH, XHHW, XHHW-2, ZW-2
	COPPER		
18	–	–	14
16	–	–	18
14	15	20	25
12	20	25	30
10	30	35	40
8	40	50	55
6	55	65	75
4	70	85	95
3	85	100	110
2	95	115	130
1	110	130	145
1/0	125	150	170
2/0	145	175	195
3/0	165	200	225
4/0	195	230	260
250	215	255	290
300	240	285	320
350	260	310	350
400	280	335	380
500	320	380	430
600	350	420	475
700	385	460	520
750	400	475	535
800	410	490	555
900	435	520	585
1000	455	545	615
1250	495	590	665
1500	525	625	705
1750	545	650	735
2000	555	665	750

Per NEC 310.15(B)(5), the ampacity of 4/C cables shall be reduced by a factor of 0.80 when the neutral is considered a current-carrying conductor.

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## MC CABLE CONNECTOR SIZE

ALUMAFLEX® MC WIRE SIZE (3 conductor)	GROUNDING CONDUCTOR (AWG)*	APPROXIMATE DIAMETER OVER ARMOR (inches)	ARLINGTON PART #	ALUMAFLEX® MC WIRE SIZE (4 conductor)	GROUNDING CONDUCTOR (AWG)*	APPROXIMATE DIAMETER OVER ARMOR (inches)	ARLINGTON PART #
#6-3	6 bare	0.784	8412	#6-4	6 bare	0.850	8412
#4-3	6 bare	0.879	8412	#4-4	6 bare	0.960	8412
#2-3	4 bare	0.998	8412	#2-4	4 bare	1.090	8412
#1-3	4 bare	1.108	8413	#1-4	4 bare	1.210	8413
#1/0-3	4 bare	1.188	8413	#1/0-4	4 bare	1.300	8413
#2/0-3	4 bare	1.274	8413	#2/0-4	4 bare	1.400	8414
#3/0-3	4 bare	1.376	8413	#3/0-4	4 bare	1.610	8414
#4/0-3	2 bare	1.508	8414	#4/0-4	2 bare	1.740	8414
#250-3	2 bare	1.648	8414	#250-4	2 bare	1.900	8415
#300-3	1 bare	1.842	8415	#300-4	1 bare	2.020	8415
#350-3	1 bare	1.942	8415	#350-4	1 bare	2.130	8415
#400-3	1 bare	2.035	8415	#400-4	1 bare	2.240	8416
#500-3	1 bare	2.201	8416	#500-4	1 bare	2.420	8416
#600-3	1/0 bare	2.415	8416	#500-4	1/0 bare	2.670	8416
#750-3	1/0 bare	2.620	8416	#600-4	1/0 bare	2.660	8416
				#600-4	400 bare	2,940	8417
				#750-4	3/0 bare	2,890	8417
				#900-4	250 bare	3,110	8417

## TIGHTENING TORQUE FOR SLOTTED HEAD SCREWS

Socket Size Across Flats		Tightening Torque	
inch	(mm)	pound-inches	(N-m)
1/8	(3.2)	45	(5.1)
5/32	(4.0)	100	(11.3)
3/16	(4.8)	120	(13.6)
7/32	(5.6)	150	(16.9)
1/4	(6.4)	200	(22.6)
5/16	(7.9)	275	(31.1)
3/8	(9.5)	375	(42.4)
1/2	(12.7)	500	(56.5)
9/16	(14.3)	600	(67.8)

## SOUTHWIRE MC CABLE PRODUCTS

Southwire can provide many armored products that may be needed for your project. The Southwire catalog provides a complete list of MC cable products in feeder and branch circuit sizes. Southwire also offers a variety of flexible metal conduit, liquidtight, non-metallic and other specialty products.

### FEEDER SIZES AND FITTINGS

- Copper MC feeders in sizes ranging from 1 AWG through 750 kcmil, with or without PVC jacket.
- Aluminum alloy 8000 Series (8176) AlumaFlex® MC feeders from 6 AWG through 1000 kcmil with or without PVC Jacket.
- A complete line of fittings for MC feeders for either dry or wet locations.

### BRANCH CIRCUIT SIZES WITH ALUMINUM ARMOR

- Copper conductors in sizes from 14 AWG through 2 AWG.
- An **Isolated Ground** with copper conductors in sizes from 14 AWG through 6 AWG.
- **Oversized Neutral** with copper conductors in sizes from 14 AWG through 2 AWG.
- **Multiple Neutrals** with copper conductors in sizes from 14 AWG through 6 AWG.
- **Multi-Circuits** with copper conductors in sizes from 14 AWG through 6 AWG.
- **PVC Jacket** with copper conductors in sizes from 14 AWG through 2 AWG.
- **Red Fire Alarm** with copper conductors in sizes from 18 through 10 AWG.
- **MC<sup>AP</sup>® Metal Clad All Purpose Cables** with copper conductors in sizes from 14 AWG through 6 AWG and full-sized aluminum equipment grounding/bonding conductor.
- **HCF-MC<sup>AP</sup>® Metal Clad All Purpose Cables** with copper conductors in sizes from 12 AWG through 6 AWG for use in health care facilities.

### BRANCH CIRCUIT SIZES WITH STEEL ARMOR

- MC with steel armor is available with copper conductors in branch circuit sizes from 18 AWG through 2 AWG.

### CUSTOM ARMORING

If your installation requires a special conductor assembly, Southwire can provide pricing for these special cables. Minimum runs will be required for these specials. Please contact your Southwire Sales Office for further details.

This publication is a collection of items of general information related to the subject of MC Feeder Cables. It is not intended to be nor should it be used as authority for design, construction, use or installation. The design, construction, use and installation of Metal Clad cables and flexible conduit should only be undertaken by competent professionals in light of currently accepted design and engineering practices.

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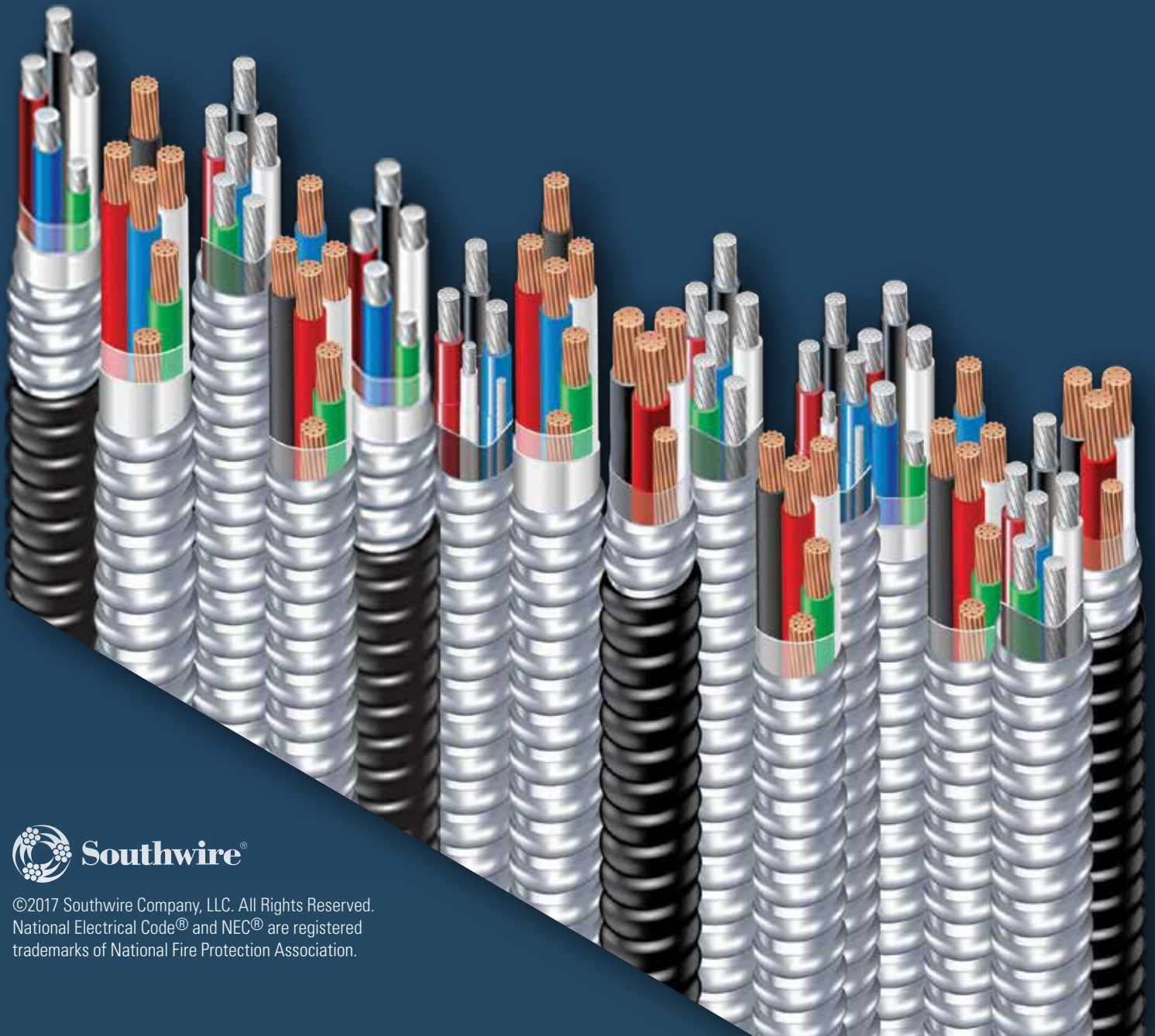
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**ARMORLITE**  
Metal Clad Cable

**MEGA  
MC**

**Riser MC™**  
High Rise Cable



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