



UPDATE

A technical publication for transmission and distribution engineers

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To make more information accessible to Southwire customers and readers of T&D Update, we've put our newsletter online at www.mysouthwire.com. Here's what you'll find in your current online T&D Update:

- **SIW Compressed Stranding Brings a New Look**
- **When Emergencies Exceed Planning**
- **These Wires Cover The Ground**



SIW Compressed Stranding Brings a New Look

A new form of stranding looks different, but still delivers Southwire quality and performance.

You'll be seeing a new look in many of Southwire's popular utility cable products – but Southwire quality is still built into every foot of wire.

"In some utility products we're making a running manufacturing change from traditional unilay compressed stranding to a new type of compressed stranding called SIW compressed," says Nick Ware, technical director of Southwire's Energy Division. SIW stands for "Single Input Wire." The new stranding technique uses combinations of a small number of strand sizes to produce standard ASTM conductor sizes from #2 AWG to 350kcmil.

SIW goes into selected products

SIW compressed stranding will appear primarily in underground cables, but may also show up in non-load-bearing phase conductors in overhead multiplex service drops. It's a drop-in replacement for traditional unilay compressed stranding that's routinely used today by Southwire and others for these same products. The traditional unilay stranding is defined by ASTM standard B 231. SIW compressed stranding is defined by ASTM standard B 901.

What does SIW stranding mean for utility cable users? In actual applications, no real change. You can use SIW compressed interchangeably with unilay compressed stranding. If you take a cross section of an SIW stranded cable, it will look somewhat different from traditional compressed unilay, but cross-sectional areas and diameters are the same, and all the same fittings work. Connector testing in cooperation with three major manufacturers has verified complete interchangeability of the two designs.

What about springback – that attribute that literally hits you in the face when training a cable into a tight location? Testing at Southwire’s Cofer Technology Center shows that a #1/0 AWG, SIW stranding is actually easier to work with and train than conventional stranding.

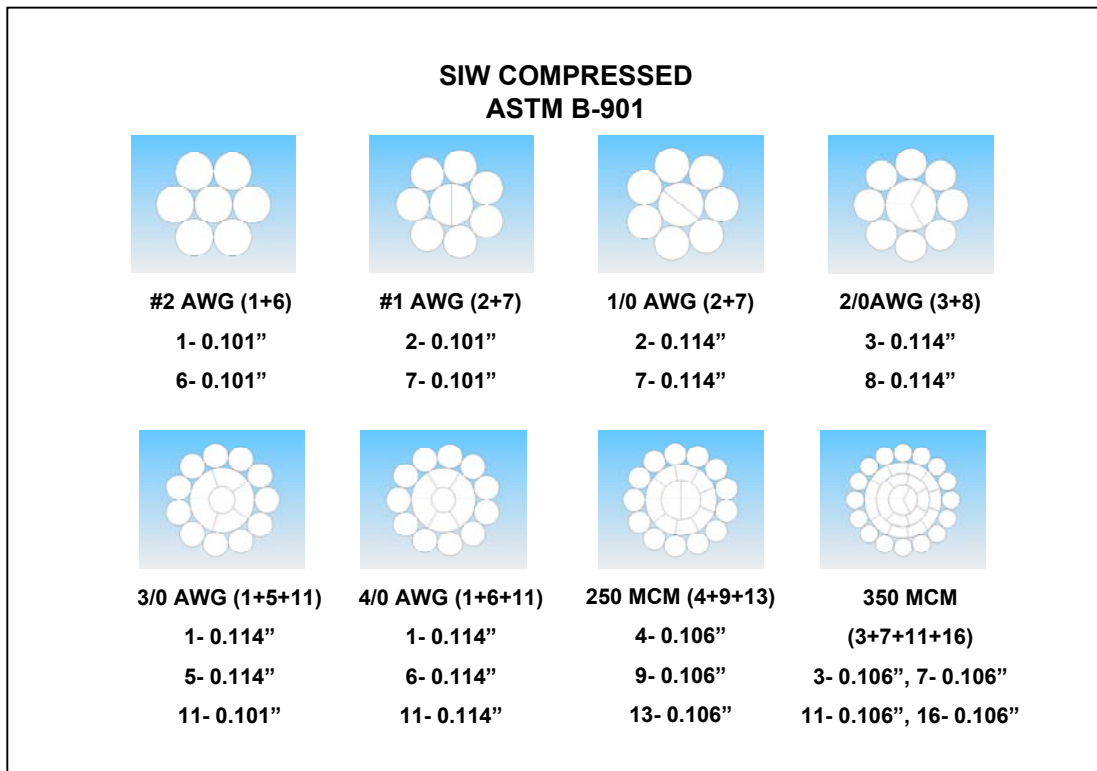
More conductor sizes from fewer strand sizes

What exactly is the difference in the new stranding? SIW stranding produces a wide range of finished conductor sizes from a smaller range of individual strand sizes. That permits manufacturing efficiencies that will help Southwire hold the line on cable prices as materials and energy costs continue to escalate. The accompanying sketches show the cross sections you’ll see in several common sizes of SIW compressed conductors.

“The first SIW compressed stranding products are slated for availability in the first quarter of 2005,” says Ware. “We’re pleased to be able to take this proactive step to help our customers maintain wire and cable costs.”

Notes on SIW Compressed Stranding in Specific Sizes:

- The SIW compressed size range starts with #2 AWG. A #2 AWG SIW compressed conductor looks just like a #2 AWG unilay compressed conductor with seven strands.
- A #1 AWG SIW compressed conductor has two more strands than a conventional unilay compressed seven-wire #1 AWG conductor.
- The #1/0 AWG SIW compressed conductor is made up of nine strands and is probably the most different in physical appearance from traditional unilay compressed stranding.
- The 350 kcmil SIW compressed conductor uses some non-traditional strand shapes in the core, but it still uses 37 wires, just like traditional unilay compressed.



SIW compressed stranding produces a wide range of conductor sizes from a small range of individual strand sizes. Core strands may be non-traditional shapes.



When Emergencies Exceed Planning

Four hurricanes in a row challenged Southeastern utilities. Southwire helped deliver power.

All utilities have emergency storm plans – but reality has a way of being unplannable. When emergencies overwhelm planning, Southwire pitches in.

For example, who could plan on four hurricanes in six weeks? Charley, Frances, Ivan, and Jeanne left layer on layer of storm-downed utility lines in the Southeast – and any one of them would be major damage. Southwire rose to the occasion.

“Southwire employees were on call 24 hours a day from August 11 through the first week of October, responding to customer calls and coordinating with manufacturing.” says Tommy Gable, director of sales for the Southeast Region of Southwire’s Energy Division.

Manufacturing agility – and storm know-how – met needs quickly

Southwire employees take great pride in playing a key role in restoring power. As the storms raged, Southwire plants in Georgia, Illinois and Kentucky moved quickly to shift production to products needed to return service to thousands of utility customers. Accustomed to responding to emergency calls and supporting power restoration efforts, Southwire people in all areas of production, logistics and customer service stretched themselves and their suppliers to produce the much-needed cable at record levels.

In that critical period, Southwire plants supplied storm-damaged areas with more than 200 shipments of overhead conductors of all sizes, covered service drops and bare copper for transformer connections.

Southwire’s understanding of storm damage was a key factor in the response. Where a single utility may see a major storm only every few years, Southwire helps customers deal with major storms every year. In many cases, plants anticipated needs, running bare overhead and service drops as soon as the storms hit, to stay in front of the utilities’ major needs. One customer commented that due to Southwire’s performance, concern about wire and cable availability went from their number-one worry on the first day of Hurricane Charley, to their lowest issue as Frances approached.

Emergency efforts extract a cost

Storm response can be a costly effort. “Although heroic measures are critical to storm recovery, emergency response also brings an overall cost,” says Gable. “When carefully balanced schedules are scrapped, there’s an impact in lost manufacturing efficiency. Everyone, Southwire, transformer manufacturers, and the utilities themselves, sees these costs. It is the price of living in the real world where hurricanes, ice storms, and other catastrophes do happen.”

Eddie Adams, president of Southwire’s Energy Division, concludes, “Throughout Southwire’s 54-year history of providing wire and cable to the electric utility industry, we always have placed a special emphasis upon customer service. While we certainly regret the circumstances, we are pleased to have been in a position to support the utilities in Florida as they worked to restore power and help life get back to normal for millions of people.”



These Wires Cover the Ground

Protected ground wire eliminates conduit and moldings on utility poles.

Running a copper grounding wire down a utility pole is a simple concept, but the installation can be a little more complicated. Southwire helps make that simpler.

“To enhance public safety, some states – such as California – require that pole grounding wires be protected mechanically,” says Nick Ware, technical director of Southwire’s Energy Division. “Working with one of our utility customers, Southwire has developed a cost-effective, time-saving answer for that need: Protected Ground Wire.

Typical solutions for protecting a ground-wire include running it through PVC conduit or under an oak molding. Both of those protection methods require time-consuming additional installation steps. Southwire’s Protected Ground Wire offers all the required protection, and is much easier to install than either conduit or molding.

Conduit-level protection in a wire covering

Protected Ground Wire incorporates conduit-level protection into the wire covering. Southwire engineers designed a rugged, sunlight-resistant covering that meets all the required conduit tests for crush and mechanical protection. And, since the wire can simply be stapled to a wooden pole, it’s very quick to install.

The covering of Protected Ground Wire is 110 mils of UV-resistant, black low-density polyethylene. Sunlight resistance of the covering is expected to exceed 50 to 75 years. This heavy wall thermoplastic covering withstands the impact requirements for PVC Schedule 80 conduit without splitting, and impulse breakdown on undamaged cables typically exceeds 200kV, after bending the wire in a 2-inch diameter circle. Even after impact testing, impulse breakdown typically exceeds 100kV.

Protected Ground Wire at a Glance

Size	Covering Thickness	Diameter (Mils)	
		Bare	Covered
(AWG)	(mils)		
8	110	128.4	348.5
6	110	162.0	382.0
4	110	204.3	424.3

Use Protected Ground Wire for transformer connections, too

Protective Ground Wire is available in conductor sizes AWG 8, 6, and 4. A soft copper solid conductor enhances flexibility and allows easy training. Protected Ground Wire is also suitable for use as a covered overhead transformer lead or transformer-bank buss wire.

Protected Ground Wire provides high levels of physical protection and meets or exceeds:

- ASTM Standard B3 for Soft or Annealed Copper Wire
- NEMA TC-2 impact requirements
- Lightning impulse breakdown typically exceeding 1,100 V/Mil measured per IEEE 82.

"This is a simple product for a straightforward application, but it saves measurable time and money." says Ware. "And it's another example of Southwire response to a specific customer need."

More information on Southwire's Protected Ground Wire is available in the Southwire online product catalog, at www.southwire.com.

Overhead Transmission and Distribution Products

- ACSR, ACAR, ACSS, AAC, AAAC-6201
- ACSR/TW, ACSS/TW, AAC/TW
- ACSR/AW, ACSS/AW
- Motion Resistant™ Oval Conductor
- Covered Line Wire (Aluminum, Copper)
- 5kV and 15kV Spacer Cable-Tree Wire
- Transformer Riser Wire
- Solid and Stranded Bare Copper
- Armor Wire, Tie & Ground Wire
- Optical Ground Wire (OPGW)



Underground Transmission and Distribution Products

- 15kV – 46kV Primary UD Cable
- 15kV - 46kV Jacketed Primary UD Cable
- 15kV – 46kV LCT Shielded Primary UD Cable
- Forte High Voltage Cable Systems (cable from 69 kV to 230kV) including design, installation, accessories and construction of high voltage cable systems

Secondary Cable Products

- SureSeal™ Self Sealing Cable
- Single and Multiplex 600V Secondary UD
- Single and Multiplex HI-SCORE® 600V Secondary UD
- AlumaFlex™ Extra Flexible Secondary UD
- Multiplex Service Drop (Aluminum, Copper)
- PAC and RTS Cable

Power Generation Products

- 600V Tray Cable
- 600V Power Cable
- 5kV – 15kV Medium Voltage Cables
- SOLONON Excitation Cable (1550 kcmil)
- Substation Control Cable

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Southwire Company is the largest energy cable producer in North America.
Based in Carrollton, GA, our family owned company has a 50-plus year
heritage of quality and service.