EDITION 23
VOLUME 1

23 INTERESTING FACTS & UNIQUE PRODUCTS TO ACCELERATE TELECOM & 5G DEPLOYMENT

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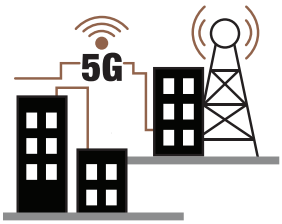
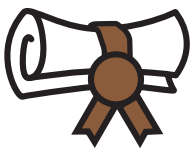


5G IS THE FUTURE

As the latest global wireless standard after 1G, 2G, 3G, and 4G systems, 5G is the 5th generation mobile network. 4G can download data up to 1 gigabyte per second (Gbps), and 5G is targeted for a tenfold increase to deliver a speed of 10 Gbps up to 20 Gbps. 5G technology enables an ultra-fast wireless cellular communication platform to connect everyone and anything including heavy machinery, objects, internet of things (IoT), and the mega data load from virtual reality that has already transformed our daily lives. Southwire, one of the largest wire and cable producers in the world, has played a pivotal role in the telecom supply chain over the past few decades and will continue to make an impact.

FCC'S 5G DEPLOYMENT

The Federal Communications Commission (FCC) regulates interstate and international communications via radio, TV, satellite, wire, and cable in all 50 states, the District of Columbia, and U.S. territories. It is an independent agency overseen by Congress with the critical responsibility of implementing and enforcing America's communications law. FCC has taken action to advance 5G by releasing the gigahertz (GHz) spectrum into the US market to expand the high-band and the mid-band services. FCC is also acting to enhance the use of low-band frequency range, which contributes to a wider coverage.

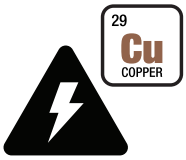


BIPARTISAN INFRASTRUCTURE BILL (BIL)

The $65 billion federal investment in broadband from the Bipartisan Infrastructure Bill (BIL), also known as the Infrastructure Investment & Jobs Act (IIJA), is the single largest government funding to transform the US digital network. The funds allocated to the states and local governments may also apply for grants. This program will boost broadband speed, improve quality, and create affordable access nationwide.

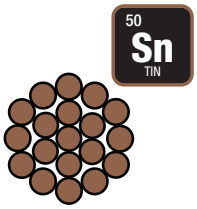
INDUSTRY LEADERSHIP TO DRIVE SAFETY

Southwire is proactive in the key industry communities including ATIS (Alliance for Telecommunications Industry Solutions), SCTE (Society of Telecommunications Engineers), and Sustainability in Telecom-Energy & Protection (STEP). We also serve in leadership roles for National Electrical Protection (NEP), Network Physical Protection (NPP), and Network Power Systems (NPS). Our continuous codes and standards involvement in UL, CSA, ICEA, NFPA, NEC, NEMA, Copper Development Association, and many more enable Southwire's subject matter experts to drive safety to meet the explosive growth in US infrastructure including telecom.



COPPER'S ELECTRICAL CONDUCTIVITY

Southwire sources a premium grade of copper cathode for casting, which yields the highest conductivity and lowest resistance. Upon thermal annealing, soft-drawn copper exhibits an electrical conductivity of 100% at 20°C per International Annealed Copper Standard (IACS). The minimum copper percentage, or purity, is 99.9% and the maximum impurity, or oxygen and other trace element content, is 0.1%. Copper is selected for many electrical and grounding applications instead of aluminum because of its superior electrical, thermomechanical, physical, and chemical properties. All telecom products are designed with copper conductors to achieve the maximum current carrying capacity.



TINNING TO DEFEND AGAINST CORROSION

Applying a thin layer of tin coating to the individual copper wire strands shields the bare copper from environmental conditions. Tinned copper designs are governed by ASTM B33 and are an acceptable alternative conductor option for many insulated cable products certified by UL and CSA. Tinning of copper facilitates soldering and enhances its corrosion resistance significantly. All TelcoFlex® products are made of individually tinned copper wires.

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MADE IN AMERICA

All raw materials for Southwire's telecommunications products, including metals, components, and compounds sourced for wire drawing, conductor stranding, tinning of copper, extrusion, taping, braiding, cabling, jacketing, printing, testing, and the final packaging, are produced in America. Southwire's telecom product offering meets the Build America, Buy America (BABA) requirements and are fully compliant with 49 U.S.C. § 5323(j) regulation. You can access our engineering spec sheets for telecom power products for your upcoming infrastructure or government projects by **scanning the QR code**.

ACCESS SPEC SHEETS

ENVIRONMENTAL PRODUCT DECLARATION

As we continue to build on our commitment to environmental stewardship and corporate sustainability, Southwire is developing a portfolio of Environmental Product Declarations (EPD), a transparent report that details the environmental impact of a product during its lifetime, per ISO 14025. We have published many EPDs in our growing portfolio and you can access an example for our Type THHN conductor commonly sourced for telecom by **scanning the QR code.**

ACCESS PUBLICATIONS

SCR® TECHNOLOGY

Southwire Continuous Rod (SCR®) Systems deliver over 50% of the global copper continuous-casting capacity. Copper rod, designated Electrolytic Tough Pitch (ETP), is transformed into fully-annealed copper commonly used for grounding, corrosion-prone systems, and higher voltage systems with high ampacity requirements. The Unified Numbering System (UNS) for ETP Copper is C11000, which applies to all copper products regardless of temper or stranding classifications. Southwire's copper conductors have been specified in North America for critical infrastructure expansions including telecommunication applications.

TELCOFLEX® L2, L3, L4 TELECOM POWER CABLE

The most significant fire in telecom history occurred in 1988. A central office fire, comprised of 95% smoke and 5% thermal, paralyzed most of Chicago, including the O'Hare airport, and impacted 500,000 residents and businesses. Firefighters' ability to rescue victims and stop the fire was impaired due to the toxic acid gas. As a result, TelcoFlex® cable was born. The new design showcases a proprietary non-halogenated formulation with better bendability and durability. L2 and L4 constructions utilize rope-lay stranding to bolster the greatest flexibility when routing through sharp bends and tight spaces for ease of installation. TelcoFlex® products are frequently specified for use in AC and DC power telecom applications such as central offices (CO), CATV head-end, data centers, and cell towers.

SUSTAINABLE WIRE & CABLE SOLUTIONS

Southwire is a one-stop shop for residential, commercial, industrial, and utility projects. Over 100 of our products have independently verified Environmental Product Declarations (EPDs), helping you make informed decisions about the carbon footprint of your projects. The product life cycle is scrutinized from the extraction of raw materials, design, manufacturing, code and standard compliance, installation to energy consumption, and the final disposal. **Scan the QR code** to access our full engineering spec library.

ACCESS SPEC SHEETS

TELCOFLEX® TELECOM CONTROL CABLE

For internal wiring of electronics such as telephone equipment, we offer a 600V single conductor Appliance Wiring Material (AWM) Style 1491 in a full range of sizes from 24 AWG to 2 AWG. It is a dual-rated product certified to both UL-758 and CSA C22.2 No. 210 using PVC insulation and a lacquered cotton braid. The smaller sizes can be designed with a solid conductor to prevent moisture ingression commonly seen through the conductor. All sizes can be constructed with a flexible tinned copper conductor to boost flexibility. This braided hook-up wire is made with a flame-retardant compound, carries a VW-1 marking, and is lead-free and RoHS-3 compliant.

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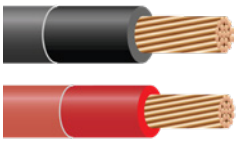
TELCOFLEX®-G L5 AND L6 GROUNDING

TelcoFlex®-G L5 and L6 green grounding conductors, suitable for DC or AC systems, can be installed in conduit or underground duct with sunlight, gasoline, and oil resistant properties. The crosslinked XHHW-2 insulation with a superior thermal stability allows the cables to be operated at 90°C wet or dry continuously, 130°C under emergency, and 250°C during short circuit loading. In addition to Southwire's E30117 certification per UL-44 for thermoset-insulated cables, these designs also comply with ICEA S-95-658 (NEMA WC70 Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy).

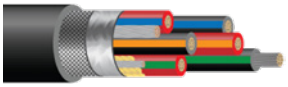


INTERMEDIATE THHN/THWN-2 FOR CELL TOWER

SIM*pull* THHN/THWN-2® cables rated 600V in intermediate sizes are primarily used to power transmitters and radio heads. They feature 19 stranded bare copper conductors meeting multiple ASTM standards and PVC insulation with nylon covering qualified per UL-83 for thermoplastic insulated wires and cables. The products utilize a proprietary SIM*pull*® Technology to reduce surface friction and facilitate challenging long pulls. The most common sizes are 6 AWG and 4 AWG in both black and red. These common building wire products are also certified for gasoline and oil resistance and are marked for flame ratings including VW-1 per UL and FT1 per cUL.

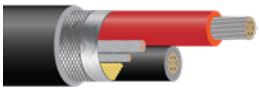
TELCOFLEX® TRAY CABLE

600V TelcoFlex® tray cable is built with a flexible tinned copper conductor, Low Smoke, Zero Halogen (LSZH) insulation with a Limiting Oxygen Index (LOI) of 35%, and extruded with a sunlight resistant overall thermoset jacket. It is marked FT-4, which is a vertical flame rating per IEEE 1202, and it is also listed per UL for "CT USE" (Cable Tray rated). It is the most frequently sourced product for central office, CATV head end, data center, and cell tower applications. 90°C is the maximum normal operation temperature in dry locations and 60°C is the upper limit under wet exposures.



SOUTHWIRE DISCRETE POWER

Southwire's Discrete Power Cable is the number one product for industrial power or control circuits via cable trays, raceways, or outdoor locations supported by a messenger. These constructions are listed for Tray Cable Exposed Runs (Type TC-ER) per NEC 336.10. Type TC in sizes 8 AWG and larger can be direct buried and installed in Class 1, Division 2 hazardous locations. This cable shall not exceed 75°C under wet conditions and stay below 90°C in dry locations.



TELCOFLEX® SMALL CELL POWER CABLE

TelcoFlex® Small Cell Power Cable is rated as TC-ER (Tray Cable-Exposed Run) and is secured vertically up the cell tower where the inner conductors are used as jumpers. It is constructed with a tinned copper conductor with flexible stranding (Class K), THHN insulated inner conductors, and a dual layer shield comprised of an aluminum foil for 100% coverage plus a braided shield for better flexibility and mechanical ruggedness.
The combined shielding material is effective in defending Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI) that result from radio transmitters, TV stations, motor control circuits, or computing equipment and it performs excellently in high-frequency applications.

SOUTHWIRE HYBRID POWER FIBER CABLES

5G cell sites are built with the radio head at the top of the structure located next to the antennas to run both power and fiber atop the tower. Hybrid cables combine optical fiber communication, power, and control conductors in a single assembly to connect data and deliver power to radio heads. The new tower design amplifies the range approximately 200 to 300 feet over the old construction. Southwire offers custom cable solutions that contain either standard THHN power cables or LIW low inductance constructions.

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CONTINGENCY PLAN

Southwire has invested steadily in wire and cable manufacturing facilities where we produce infrastructure, industrial, and utility products, including telecom. Older machines are replaced with the state-of-the-art equipment to perform extrusion, plexing/cabling, braiding, and jacketing processes. The factories are modernized to enhance the product quality, worker safety, and Overall Equipment Effectiveness (OEE), as well as reduce waste. These investment efforts to expand production capabilities and machine redundancies in different states have solidified the best contingency plan and business continuity in case of a major natural disaster impacting one specific plant location or part of the production chain.

INSPECTOR'S APPROVAL

Signed engineering letters are often requested per inspectors, project owners, or electrical contractors to confirm code compliances and safe practices. Southwire's CableTechSupport™ Services team is comprised of diverse talents with credentials ranging from Ph.D., Master of Science degrees, to Professional Engineer (PE) certification. The team receives more than 15,000 technical requests yearly. We also prepare and submit over 100 signed documents per year to gain approvals from Authorities Having Jurisdiction (AHJ) or end users in case there are concerns about the validity of the installations or the decision to replace or repair aging assets or damaged cables.

HIGH-STRENGTH PULL TAPE

In addition to the full line of telecom wire and cable offerings, we also supply a flat woven pulling tape with an ultra-high breaking strength. It contains 100% polyester for low absorption of moisture. It exhibits the highest cut resistance to conduit abrasion or burning-through during challenging long pulls. The reduced tensile elongation at break not only boosts safety but also improves accuracy due to minimum stretching. The tape is printed with sequential footage markings for ease of locating, efficient maintenance, and fast cable replacement.

CABLETECHSUPPORT™ SERVICES

Southwire's CableTechSupport™ Services' Re³™ mission statement signifies the commitment to Respond, Rectify, and Restore with Reinforced, Resilient, and Reliable solutions. We have published many whitepapers to help customers select the best products and to plan the most challenging projects. You can access these articles online by **scanning the QR code.**

ACCESS WHITEPAPERS

DECADES OF FIELD FEEDBACK & BRAND IDENTITY

Hundreds of millions of feet of Southwire's TelcoFlex® products have been installed in the US. With over 70 years of engineering design and manufacturing expertise, we have a track record in innovation to exceed customer needs. Installers, project managers, and procurement teams have been specifying TelcoFlex® cables for telecommunications or 2G/3G/4G/5G projects for over three decades.

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