



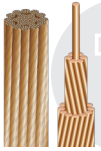
**EDITION 31**  
**VOLUME 1**

# 12 MADE IN AMERICA

## RENEWABLE PRODUCTS TO ACCELERATE BATTERY STORAGE, EV, WIND, AND SOLAR DEPLOYMENT

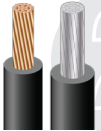
### COMPOSED BY

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### 1. BARE COPPER GROUNDING

Grounding is of crucial importance for all electrical systems and is often the first design element to specify for substation and renewable power projects. Grounding conductors contain soft-drawn fully annealed uncoated copper, which can be made of a single strand for conductor sizes 4/0 and smaller. Class B or C stranding is selected to enhance flexibility compared to the rigid single strand design. Ultra flexible rope-lay stranding such as Class G or H per ASTM B173 is best suited for non-tensioned short-length installs and is deployed as continuity jumpers or to equalize potentials as a temporary jumper.



### 2. RHH/RHW-2/USE-2

Type USE-2 is a 600 V Underground Service Entrance cable certified to UL-854 and is marked with Southwire's unique E-file E32071. It is also dual-rated as Type RHH/RHW-2 per UL-44. USE-2 is frequently installed for below-grade or direct burial applications as the crosslinked XLPE insulation with a heavy wall design allows the cable to withstand high impact and crushing force per UL qualification testing. These cables are often specified for wastewater treatment plants (WWTP) and data centers in addition to renewable projects.



### 3. SIMpull XHHW-2®/RW90 CABLE

For critical and heavily loaded circuits that demand a higher voltage rating, SIMpull XHHW-2® cable is the best alternative to SIMpull THHN/THWN-2® cable as it is dual-rated for 600 V and 1000 V. This product is certified to UL-44 under Southwire's E-file E30117. It is extruded with a flame-retardant crosslinked polyethylene (FR XLPE) insulation, which is naturally halogen-free with zero acid gas emission compared to THHN/THWN. This is one of the most sustainable building wire solutions for any construction seeking LEED compliance. This product has gained popularity due to its triple certifications, which include UL for the USA, CSA for Canada, and NOM-ANCE for Mexico.



### 4. SIMpull XHHW-2® CABLE-IN-CONDUIT

Southwire offers extensive SIMpull XHHW-2® cable and high-density polyethylene (HDPE) conduit options, with many color and size combinations to be bundled into a Cable-in-Conduit (CIC) assembly. These all-in-one CIC solutions have gained traction because they eliminate separate packages and prevent cable damage from handling and on-site pulling. The XHHW in CIC design is best suited to power mega-scale EV infrastructure projects, including level 2 and DC fast-charging systems.



### BUILD AMERICA, BUY AMERICA

All of Southwire's renewable products listed on this whitepaper meet the Build America, Buy America (BABA) policy and comply with 49 U.S.C. § 5323(j) regulation. Raw materials from drawing, stranding, extrusion, shielding, and jacketing are made in the U.S.A. The most frequently requested products showcased here are designed to



power EV, wind, solar, and battery energy storage systems (BESS). Scan the QR code to access the spec library.



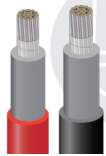
### CABLETECHSUPPORT™ SERVICES

Southwire's CableTechSupport™ Services group features certified MV splicers, Professional Engineer (PE) certifications, Ph.D., MBA, and Master of Science degrees in engineering. Over 15,000 technical requests with 100 signed letters are submitted yearly to gain approvals from engineers, inspectors, and Authorities Having Jurisdiction (AHJ). Our whitepapers and online tools help customers select



the most Reinforced, Resilient, and Reliable products. Scan the QR code to access our technical library.





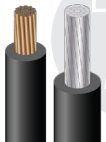
### 5. DLO 2 KV RHH/RHW-2

Diesel Locomotive Cable (DLO) contains a Class I flexible, tinned copper conductor coextruded with a crosslinked EPDM Insulation and a thermoset CPE Jacket. This 2 kV product can power diverse applications due to its triple ratings including MSHA approval, UL marking for Type RHH/RHW-2, and CSA listing as RW90. RHW-2 denotes the maximum continuous operating temperature of 90°C in both wet & dry locations. It also carries an FT-4 vertical flame rating that delays fire spread. DLO is frequently used in prefabricated cable bus designs or cable management systems in data centers that are easily adjustable. Moreover, they are often installed in battery banks and Uninterruptible Power Supply (UPS) systems.



### 6. RENEWAFLEX™ 2 KV RHH/RHW-2 CABLE

These gasoline and oil-resistant 2 kV power cables are preferred internal wiring for Battery Energy Storage Systems (BESS). Class K flexible stranded bare copper is used from 6 to 4/0 AWG, and larger feeder cables from 250 to 750 kcmil are designed with Class I for ultra flexibility. They can be installed in wet or dry locations using various raceways, including metal conduits, HDPE ducts, troughs, and open or covered trays. Different color options like black, red, green, brown, and yellow allow easy circuit identification and maintenance. The single-layer thermoset XLPE insulation complies with RoHS-3 European Directive 2015/863.



### 7. PV WIRE RHH/RHW-2

Photovoltaic (PV) wires connect solar panels and other equipment to withstand the harsh environments of solar energy-rich regions. The single-layer insulation is based on a moisture-cured crosslinked polyethylene (XLPE) material, allowing the cables to be exposed in wet areas above ground or directly buried below grade in earth or installed using conduits, ducts, troughs, or trays. It is important to note that UL-4703 does not cover the Cable Tray rating. Thus, Southwire's PV wires certified to UL-4703 (E316464) are not marked for CT use. However, per NEC® Article 690.31, PV wire, without a cable tray rating, shall be permitted in cable trays installed in outdoor locations, provided that the cables are supported at intervals not to exceed 12 inches and secured at intervals not to exceed 54 inches.



### 8. TYPE W RHH/RHW-2

Type W cable is a heavy-duty industrial cable designed with flexible and annealed bare copper rope-lay for portable and extra-hard usage per NEC® Article 400. It is best suited for continuous submersion in water and ideal for submersible pumps. It can be installed in cold conditions and be specified for light to medium-duty mining applications. It meets UL 1650 for portable power applications and is approved per the NEC® as Type RHH/RHW-2 90°C wet or dry. The FT-1 and FT-5 markings are flame ratings based on passing the vertical and the horizontal flame tests.



### 9. SOUTHWIRE® MACHINE FLEX® CABLE

Southwire® Machine FLEX® cables with Class K or Class I flexible rope-lay stranded copper can maintain their form during installations with multiple tight bends. They can be terminated easily in congested spaces such as motor terminals and generator connection boxes. They also offer a smaller minimum bending radius than DLO and are ideal power wiring for prefabricated switchgear lineup interconnection. Multiple certifications include THHN/THWN-2, Appliance Wiring Material (AWM), Machine Tool Wiring (MTW), and T90 per CSA for Canadian systems. Southwire also offers an XHHW-2/RW90 crosslinked polyethylene version for 1 kV circuits.



### 10. ELECTRIC VEHICLE EVE & EVC

EV charging cables rated 300 V or 600 V/1 kV are in growing demand to power residential or commercial charging stations. The multi-rated cables can be designed using a TPE or EPDM insulation and jacket, which include FT-2 flame, water, oil, crush, impact, and low-temperature resistance. They comply with UL 2263, CSA, and the NEC® Articles 400 and 625. Level 1 is suitable for 15 to 20 amps, and Level 2 is designed for 25 to 80 amps. Level 3 DC fast charging can deliver up to 400 amps, and indirect liquid-cooled cables can yield a higher current rating from 350 to 500 amps. These flexible cables can be operated from -40°C to 105°C under dry or wet conditions.



### 11. MV JUMPER & SWITCHGEAR CABLE

Southwire's medium-voltage (MV) non-shielded jumper and switchgear cable can be found in substations installed on insulators and inside switchgear isolated from the ground where a non-shielded cable is desired. This non-UL cable does not have a voltage rating and is not recognized by NEC®. UL approval can be obtained by testing the complete assembly of inside enclosures and equipment. It complies with 6.2.1.3 of IEEE C37.20.2 and 6.2.7.1 of IEEE C37.20.3, which define the insulation requirements on bus bars. Additionally, the cable has passed the 150 kV Basic Insulation Level (BIL) test that simulates a lightning strike. The passing of BIL at 38 kV allows this product to be operated up to 40 kV.



### 12. MV 35KV AL TRXLPE

MV cables are manufactured on a continuous vulcanization (CV) line with a true-triple-extrusion head. The 3-layer insulation system is a peroxide-based formulation cured under dry nitrogen. TRXLPE denotes an unfilled Tree-Retardant Crosslinked Polyethylene material. The insulation level is dictated by how fast the protective equipment can de-energize the electrical line in case of a fault. If a fault can be cleared within 60 seconds with good relay protection, then a 100% insulation level is sufficient. However, if a fault will sustain beyond 1 minute but less than 1 hour, then a 133% insulation level is required. Aluminum 35 kV cables with 100% TRXLPE insulation are commonly specified for solar and wind farms.