



EDITION 1
VOLUME 2

GUIDELINES FOR WIRE & CABLE HANDLING AND STORAGE



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INTRODUCTION:

Proper storage is critical to maintain and to protect the quality of the wire and cable products before installation. All indoor or dry rated wire & cable products shall only be stored in a controlled environment regardless of the storage duration. All building wire products should be stored indoors to reduce the risks of color fading due to sunlight exposure. For bare wires or outdoor and wet rated power cables, care needs to be taken not to expose the products to any severe weather conditions or potentially harsh environmental elements.

- **Indoor Storage Only:** Building wire products including 600V *SIMPull*® THHN/THWN (-2) & XHHW-2, Type SE, TFFN, TFN, MC Cable (both jacketed & unjacketed), Romex® Brand *SIMPull*® NM-B, SIS, lead wire (AWM), and Voice, Data, & Electronic Wiring. Any cable products designed for dry locations only or do not have a sunlight resistant marking should be stored indoors.
- **Outdoor Storage with a Regular Inspection is Acceptable:** Bare products, power cables, UF-B, RHW-2/USE-2, armored (AIA or Armor-X or HVTECK), industrial power cables MV-105 with *SIMPull*® PVC or other jacket types, mining, multi-conductors tray cable Type TC or substation control cables with an overall jacket, utility 600V or MV/HV overhead & underground cables, HDPE conduits, and flexible & liquidtight conduits.

TOP 25 COMPREHENSIVE HANDLING AND STORAGE GUIDELINES:

1. End Caps: Insulated cables should always be stored with an air-tight seal to mitigate intrusions at the cable end. If any section of the cable is cut and removed during the storage period, the cable ends need to be sealed again with a heat-sealable end cap or a cold shrink to prevent water from entering. Cable ends shall also be tied to the flange or otherwise secured to prevent cables from becoming unwound from the reel which can lead to severe injuries during handling.

2. No Standing Water: The storage site should be well drained, can stay dry most of the time, and most importantly free of flood water, which might be corrosive. If reels are stored in an uncovered area with the risk of minor flooding, it is recommended for the reels to be elevated at least 4 inches above ground.

3. Metallic Corrosions: Make sure there is no physical contact between the exposed bare wires (aluminum or copper) and any metal object (equipment, tools, building structure, steel reels, bolts, or nails) to prevent bi-metallic galvanic corrosions.

4. Cold Climate and Low Temperature Installations: Low temperatures are a cause for concern when handling and installing cables. Insulated cable products should be handled with extra care and pulled more slowly during cold weather.





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- If cables are terminated, spliced, or installed under a cold weather condition, it is recommended to place cables in a heated storage for at least 24 hours before cable preparation or installation to minimize brittle fractures.
- Many wire and cable products are manufactured using PVC-based insulation and/or a PVC jacket material or a TPE-based material. Common examples of electrical cable products that contain PVC or TPE include THHN/THWN/THWN-2, NM-B (ROMEX® Brand) Cable, Unjacketed or Jacketed MC Cable with THHN/THWN conductors, fixture wires, Low Voltage Multiconductor Control Cables, Category Cables, Coax Cables, Thermostat Wires, Fire Alarm FPLP Cables, Tray Cables or Type TC Cables with THHN conductors and a PVC or TPE jacket, etc.
- Per NFPA 70®, National Electrical Code® 2023, thermoplastic (PVC or TPE) insulation may stiffen at temperatures lower than -10°C (+14°F).
- Cable products should never be flexed or handled below -10°C or 14°F even if the cables are marked with a -40°C cold temperature rating. When handling or installing any cables containing a thermoplastic TPE or PVC compound at these low temperatures, the material will become more rigid, brittle, and crack easily.
- When products containing PVC or TPE are to be handled, pulled, or installed at or below -10°C (+14°F), the cable products should be kept in a heated storage or warehouse area for a minimum of 24 hours before installation. If the cable is to be left outside exposed to the frigid winter weathers, then a temporary heated shelter should be created around the cables prior to installation.
- Optionally, a heating blanket can be wrapped around the cables to warm up the PVC or TPE materials, which is a common practice to handle medium or high voltage cables in cold climates such as in Canada.
- These cold temperature procedures might take several hours to a few days depending on the specific size of the cable or the length of the material as well as the ambient temperature in the field.
- Once the PVC or TPE product is installed, it can be exposed to temperatures below -10°C or +14°F as long as the PVC or TPE is not moved, disturbed, bent, or impacted.

MINIMUM INSTALLATION TEMPERATURE FLYER

5. Flanges to Remain Vertical to the Ground: Reels should never be stored on the flange sides (aka pancake styles). The reel flanges are designed and produced specifically to withstand the weight of the cable in a vertical position.

6. Steel Reels vs. Wood Reels vs. Export Reels: Consideration should be taken to use steel reels if the cable weights more than 11,000 lbs. Wooden reels can be used if the cable is to be stored for less than six months and weighs less than 11,000 lbs. Either steel or wood reel should be tarped and stored on a hard surface. Visual inspection of the wooden reel should be performed before use of cable to ensure there is no wood degradations that could have weakened the integrity of the reels and cause injuries or damages to the products. Export reels are designed by the suffix "E" in addition to the standard reel designation. All reels with an "E" suffix are treated with a wood preservative and are designed to withstand the expected load and handling requirements of export shipment. For example, "A-38E" represents an "A" series reel with a volume of 38,000 cubic inches, designed and treated for exportation.

Detailed reel package information can be found in the links attached below.

PACKAGING GUIDE

REEL PACKAGING INFORMATION





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- 7. Pallets:** Wood reels should always be supported on pallets or spacers as they elevate the reels and prevent direct contact with the ground, especially if they will be stored in an uncovered area. The pallets also allow the forklift to pick up the reels while minimizing puncturing damage and preventing injuries during handling. Never allow forklifts or any equipment to be in direct contact with the cable or the reel wrap.
- 8. Limited Stacking:** Building wire or low voltage cables on plastic spools can be stacked on the side to save storage space. However, it is not recommended to stack more than three plastic spools on top of each other as the spools might fall over and cause injuries or permanent damage to the products. For larger cable products on steel reels, no stacking is allowed as the metal reels shall be stored with the flange in a vertical position. For products on wood reels, limited stacking is only allowed in a dry location or when the warehouse area is being monitored (such as Southwire's customer service centers or manufacturing plant locations). For outdoor storage spaces or where 24/7 monitoring is not possible, stacking wood reels on their flanges is not recommended due to potential damage to the packages long-term.
- 9. Crane Operations:** Unloading equipment should not come in contact with the cable or its protective covering. If a crane is used to unload the cable a shaft through both arbor holes should be used along with the proper spreader length.
- 10. Forklift Operations:** If a forklift is used to unload the cable, then the forklift must lift the reel by contacting both flanges. Never use the forklift directly on the cables. Ramps must be wide enough to support both reel flanges.
- 11. Free of Clutter:** Do not place additional items on top of the reel or store equipment in between reels whether they are stacked or not.
- 12. Leveled Concrete Floor:** A storage location should be equipped with a smooth and flat concrete floor. If not possible, the storage ground should at least be firm, leveled, and free of potholes, large cracks, and debris.
- 13. Heat Sources or Upper & Lower Ambient Temperature Limits:** Reels should be kept away from any heat-generating equipment, machines, ovens, or high temperature sources. There is no upper or lower temperature limits for the ambient conditions during storage.
- 14. Free of Chemicals:** The storage location must be free of toxic gases, corrosive chemicals, volatile solvents, cleaning agents, and oil & grease that may be spilled or sprayed onto the reel or the cables.
- 15. Air Circulation:** All reels should be stored in an area with good air circulation. Forklifts or other motorized equipment generate fumes that might be detrimental to insulated cable products. Discolorations and degradation of the insulation or the jacket material might occur after short-term exposure to corrosive fumes or gases.
- 16. Uncovered Storage for 3 Months or Less:** It is ok to store outdoor rated wire & cable products in an uncovered area. However, products need to be protected against direct sunlight, air pollution/acid rain, hailstorms, or any extreme weather events. We recommend the use of a heavy-duty and weather-resistant tarp to shield the products from direct exposures to sunlight. Extra care needs to be taken not to allow for any moisture to build up under the tarp. Products rated for "Sunlight Resistant" (or marked SUN RES) will retain their physical properties (tensile strength & elongation) upon UV exposure. However, discoloration of cable products is common for any products stored in an uncovered area without a tarp.





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17. Covered Storage beyond 3 Months: It is recommended to store all products under a covered area if the storage period is longer than 3 months.

18. Beyond the 18-month Storage: We do not recommend storing any wire or cable products for more than 18 months unless the conditions of the storage area are being closely monitored or if the warehouse location is environmentally controlled.

19. Shrink Wraps, Package Protection Types, and Level 5 Export Guard Options: Shrink wrap over the products should be left in place until product installation. Southwire offers four different types of package protection as well as premium reel package material meeting NEMA WC 26 (Binational Wire and Cable Packaging Standard).

- **TYPE I: NO PROTECTION NEEDED:** For products which require no further protection, none is provided unless requested by the customer.
- **TYPE II: PHYSICAL PROTECTION:** A solid fiberboard overwrapping is used on products requiring protection against physical damage in transit and to provide protection against weathering.
- **TYPE III: HEAVY-DUTY PHYSICAL PROTECTION:** Multiple layers of Type II fiberboard are used to provide increased protection against physical damage in transit and to provide protection against weathering.
- **TYPE IV: EXTRA-HEAVY-DUTY PHYSICAL PROTECTION:** Wood lags are used, when required by customer, to provide protection against physical damage in transit and protection against weathering.
- **TYPE V: THE LEVEL 5 EXPORT GUARD MATERIAL IS AN IMPORTANT REQUIREMENT FOR EXPORT GOODS;** however, it can be utilized to enhance the protection during long-term storage if needed.

20. Inspections During Long-Term Storage: During the long-term storage period (longer than 3 months), the reels should be rotated to allow for a thorough inspection. Check to see if the entire packaging including shrink wraps, cable ties, end caps, flanges, and reel liner material etc. are still intact and all the bolts are in good condition.

21. Product ID or Labeling: The reel tag or product label should remain and should always be secured on the package during the entire storage duration. A legible label is critical not only to identify the product type but also to track the manufacturing date to prevent excess storage time.

22. Copper Theft & Vandalism: Conduct monthly inspections at the storage location to ensure that there is no suspicious activity as copper thefts continue to be a common incident within the electrical industry.

23. Wildlife Exposures: We have seen squirrels, termites, gophers, rats, and other wild animal attacks on cables. Care needs to be taken not to use any animal deterrent spray without checking the compatibility with each insulation or jacket type.





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24. Shelf Life & General Warranty: All Southwire's wire and cable products do not have a defined shelf life. These products are composed of hard goods (metal, polymer, etc.) that are designed for long-term service once installed. As long as the products are not damaged during storage/handling and they are stored appropriately per the recommendations detailed on this document, there should be no degradation to the performance of the products and no reduction in service life. For any wire and cable finished goods supplied by Southwire Company, LLC, our standard manufacturing warranty is one year. All products manufactured by Southwire will materially conform to the specifications provided by Southwire and will be free of defects in material and workmanship ("Defects") for 12 months following ship date, under normal use and regular service and maintenance, and if installed pursuant to Southwire's instructions. You can access Southwire's Terms and Conditions via the attached link below for more detailed information related to the scope of our limited warranty.

[SOUTHWIRE'S TERMS & CONDITIONS AND 1-YEAR LIMITED WARRANTY](#)

25. Cable Service Life or Average Life Expectancy: One of the most frequently asked questions is how long will the wire & cable product last? Many variables play a critical role on the life of wire and cable systems including but not limited to cable designs, operating temperatures, accumulated service hours at the emergency temperature, installation methods, quality of terminations & splices, and the environment. All factors should be evaluated to ensure that the best design with a suitable insulation and jacket type is being utilized for the application. The industry in general agrees that no scientific principle or test method exist today to determine the life expectancy of any wire and cable products. However, Southwire does feel very confident that cables that are supplied today will easily last the 40 years that is expected by the industry provided the cables are designed, installed, protected, and operated properly.

[WHITEPAPER: TOP FACTORS IMPACTING SERVICE LIFE OF WIRE & CABLE PRODUCTS](#)

CONCLUSIONS:

The top three most common damages reported during handling and storage are: **mishandling of reels that caused the cable insulation or jacket material to tear or rip, color-fading/UV exposures, and water intrusions.** Following the twenty-five recommended guidelines listed above will protect the quality of the wire and cable products and maintain a Reinforced, Resilient, and Reliable service life especially during or after an extended storage period.

