



Technical Specifications
600 Volt Underground Cable

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Specifications Secondary Cable Crosslinked Polyethylene Insulated 600 Volt Class

1. General

1.1. Reference Standards

Cable supplied under this specification shall conform to the requirements of the latest editions, amendments, and supplements of the applicable parts of the following standards, characteristics, definitions, terminology except as otherwise specified herein:

*ANSI/ICEA S-105-692-2011 Standard for 600 Volt Single Layer
Thermoset Insulated Utility Underground Distribution Cables*

NEMA WC 26-2008 Binational Wire and Cable Packaging Standard

ANSI C2-2017 National Electrical Safety Code

1.2. Scope

This specification covers 600V crosslinked polyethylene insulated cable suitable for direct burial, for installation in ducts in wet or dry locations, or exposure to direct sunlight. The cables will be operated under the following temperature conditions:

1. Normal operation: 90° C
2. Emergency operation: 130° C
3. Short circuit operation: 250° C

This spec covers the following cable configurations:

Table 1: Cable Configurations

	S/N	Code Word	Phase Size	Neutral Size
Triplex	361	Sweetbriar	4/0	2/0
	362	Wesleyan	350	4/0
Quadruplex	2922	Wake Forest	4/0	2/0
	2923	Slippery Rock	350	4/0

1.3. General Requirements

The cable shall meet all applicable requirements of the Insulated Cable Engineers Association (ICEA) Standard Publication S-105-692-2011 with additions as detailed in this specification and shall be Underwriters Laboratories (UL) listed.

It is the responsibility of the manufacturer to ensure compatibility among all components of the cable.

2. Conductor

2.1. Material

The conductor shall be stranded, concentric-lay, and Class B 1350 aluminum or 8000 series aluminum as specified in ICEA S-105-692-2011 Section 2. Compact-round aluminum is not acceptable.

2.2. Properties

Diameters, cross-sectional areas, resistances and their tolerances shall be in accordance with the latest revision of ICEA S-105-692-2011.

3. Insulation

3.1. Material

Conductor insulation shall be crosslinked polyethylene (XLPE). The insulation shall contain black pigment to ensure weathering qualities in accordance with the ICEA S-105-692-2011. Abrasion resistant material is not acceptable.

3.2. Color

The phase conductors shall have black insulation. The neutral shall have yellow insulation or shall have black insulation with at least three equally spaced longitudinal yellow stripes extruded as part of the insulation.

3.3. Stripability

The insulation shall be free stripping from the conductor.

3.4. Thickness

Insulation thickness for each conductor size shall be as follows:

Table 2: Insulation Thickness

Conductor Size (AWG or MCM)	Thickness of Insulation (Mils)
2/0, 4/0	80
350	95

3.5. Test Reports

The cable shall be tested in accordance with ICEA S-105-692-2011. Insulation shall be tested as a Class 1 XLPE insulator as specified in Section 3 of ICEA S-105-692-2011. Qualification test reports shall be made available to Clark Public Utilities (CPU) upon request.

4. Completed Cables

4.1. Multiple Cable Assembly

Assembled cable shall consist of phase conductors and a reduced neutral twisted together with a left hand lay. The maximum lay shall not be greater than 60 times the outside diameter of any of the phase conductors.

4.2. Identification

Each conductor shall have a permanent continuous marking showing the manufacturer's name, manufacture date, type of insulation (XLPE; manufacturer's trade name is not sufficient), voltage rating, conductor size, UL 90° C and a lightning bolt in accordance with ANSI C2-2016 NESC Section 350 F. Separate phase conductors shall be individually identified. Marking shall not cause surface irregularities on the insulation.

Sequential footage shall be marked on the neutral.

4.3. Cable Placement

The cable shall be placed on the reels so that it will be protected from damage during shipment. Each end of the cable shall be firmly and properly secured to the reel. Care shall be taken to prevent looseness of reeled cable.

4.4. Corrosion

There shall be no water and no corrosion in the completed cable when the reel is shipped. Each end of each length of cable shall be durably sealed before shipment to prevent entrance of moisture.

4.5. Lengths

Shipping lengths shall be 1000 feet \pm 5% unless specified otherwise on the purchase order.

4.6. Reels

All finished cable shall be shipped on non-returnable reels meeting the requirements of Class 1 or Class 2 General Purpose Reusable Wood Reels as specified in NEMA Standard WC 26. Maximum reel dimensions shall be 58" flange, 40" traverse, and 32" drum.

4.7. Shipping Tags

The following information shall appear on one weather-resistant shipping tag securely attached to a reel head.

- Item description
- Manufacturer's name
- Date and location of manufacture
- Gross, tare, and net weights, factory reel number and shipping reel number
- Total feet of cable

4.8. Warning Labels

All reels shall have the words **"DO NOT UPEND"** printed in a highly visual color, 3" high or larger letters on the outside of each flange. Any reel delivered with the flat surface of the flanges in the horizontal plane will be rejected.

4.9. Inspection

A CPU representative shall have plant access for purpose of witnessing cable manufacturing and testing. Failure to meet any of the requirements of this specification will be cause for rejection.

5. Bidder's Data Sheet

Attached to and to be an integral part of this specification is a "Bidder's Data Sheet". A completed "Bidder's Data Sheet" shall be included with each bid or quote.

600 Volt Secondary Cable Bidder's Data Sheet

Manufacturer _____ CPU Stock Number _____

Conductor Size

Phase _____

Neutral _____

Conductor material, alloy, temper, stranding _____

<u>Item</u>	<u>Description</u>	<u>Guaranteed Values</u>
1	Outside Diameter of Cable (completed)	_____
2	Diameter of Conductor	
	Phase Wire	_____
	Neutral Wire	_____
3	Type of Stranding	_____
4	Weight of Complete Cable (lbs/ft)	_____
5	Type of Insulation	_____
6	Thickness of Insulation	
	Phase	_____
	Neutral	_____
7	Reel Size (inches, Flange x Traverse x Drum)	_____ x _____ x _____
8	Length of Cable on Reel (feet, 1000' ± 5%)	_____