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Hard Drawn Bare Copper Conductor

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Related/Referenced Documents

N/A

Version History

Version	Date	Revision Comments
01	Nov. 12, 2021	PREPA to LUMA format (006-01534, 006-01526 & 006-01609).
02	Feb. 22, 2022	General format modifications and Item 006-82621 created.
03	Feb. 19, 2025	General format modifications, TOC created, Sections 3, 4, 5, and 8 modified, and sections order rearranged.



Item Version History

Warehouse Catalog #	Asset Suite #	Version	Date
006-82621	82621	3	02/19/2025
006-01534	56082	9	02/19/2025
006-01526	56081	9	02/19/2025
006-01609	59361	9	02/19/2025



1. Introduction

This is a general specification that covers the minimum requirements for bare copper conductors to be used in the distribution system in Puerto Rico. Further information will be provided by LUMA Energy at the time of order placement and will provide information on site specific conditions, quantity, and other requirements. This document includes the general electrical and mechanical characteristics of the equipment/material.

2. Special Requirements

- 2.1. Samples shall be furnished as requested by LUMA Energy. Vendors that have supplied this material to LUMA on previous orders will not have to furnish samples at the bid opening. If any material or design changes were made to an approved product, the vendor must re-submit a sample to the material specification engineer for approval before shipping. The equipment/material will be received at LUMA's general warehouse (011) at Palo Seco, Puerto Rico. Shipping will include transportation and unloading at the indicated warehouse.
- 2.2. The vendor shall submit two (2) quotes: one for conductors on steel reel and another for conductors on wood reel. See detail of reels in section 6.

3. Literature

- 3.1. Descriptive and technical literature must be supplied by the vendor at time of bidding. This literature must include, but is not limited to details of material, drawings, documented testing, and instructions for use and installation. **The literature must be an official document from and certified by the manufacturer.** Failure to submit documents on time and duly certified by the manufacturer will cause bidder disqualification.
- 3.2. If required by LUMA, final drawings and documentation shall be submitted by the vendor before the manufacturing and shipping process for approval.

4. Compatible with

For compatible suppliers/manufacturers and models see Table 1. These models are examples of the equipment/material described in this document and do not represent a preference. LUMA will evaluate equally any model not listed here during any acquisition event.

5. Markings

- 5.1. Cable reels shall be marked outside with LUMA Energy's purchase order, item number, description of wire & specification date, code name, net length & size, gross & tare weights, and manufacturer's name & lot/production number.
- 5.2. Packaging labels and tags shall be waterproof.

6. Packaging

- 6.1. All equipment/material shall be packaged and marked in such a way as to facilitate handling and protection from damage and that the receiving warehouse can readily identify it and send it, in one complete unit, to a field location without opening crates or boxes to sort items and/or parts.
- 6.2. The conductors shall be shipped in non-returnable new reels of continuous conductor. Conductors won't be accepted by sections.
- 6.3. Wood reels shall be made of treated wood conforming with AWPA (U1 & T1-17), with a retention of 0.3 lbs./cu ft (4.81 kg/cu m) of pentachlorophenol or chromated-copper-arsenate (CCA).
- 6.4. Treatment material shall comply with AWPA P9.
- 6.5. Steel reel shall consist of a finishing high pressure hot phosphate wash and bonding agent, zinc chromate-iron oxide primer, and a final enamel coat to provide the necessary extra durability.
- 6.6. Reels shall have a minimum arbor hole diameter of 2.5 in (6.35 cm).
- 6.7. Each end of the conductor shall be firmly and properly secured to reel.
- 6.8. Reels shall be protected against damage in ordinary handling and shipping.
 - a. Manufacturers shall protect the upper layers with pieces of wood along the transverse section of reel for conductor protection NEMA level 2 wrapping of protective material.
 - b. Manufacturers shall protect conductor ends from water entrance or damage by means of an adequate seal.
- 6.9. Other types of reels will be evaluated by Luma Energy.

7. Number Per Package (Logistics)

Standard package as per Table 1 or as requested by LUMA.

8. Acceptance Criteria

- 8.1. Test required: certified by external laboratories.
- 8.2. Product shall be manufactured in accordance with the latest issue below (section 8.3). When conflicts occur between purchaser's specifications and the latest issue below, the purchaser's specification shall prevail.
- 8.3. Latest applicable codes, standards, and other regulations:
 - a. ASTM B1: Covers hard-drawn round copper wire for electrical purposes.
 - b. ASTM B8: For concentric-lay-stranded copper conductors, hard, medium-hard, or soft.
 - c. AWPA P9: For solvent and formulations for organic preservative systems (Wood Reels).

d. AWPA (U1 & T1-17): For the minimum requirements and process limitations for treating wood products (Wood Reels).

8.4. If any other standards different from the ones indicated in this document are used, the supplier must provide information showing compatibility with the required ones.

9. Description

9.1. These conductors are used for overhead lines, grounding, lighting system, electrical test equipment, and other applications.

9.2. Shall consist of a concentric lay stranded bare copper conductor as per ASTM B8.

9.3. Shall be hard drawn as per ASTM B1.

9.4. For strands/class, diameters, weight, current capacity (Amp), and ultimate strength see Table 1.

10. Inspection

10.1. Upon inspection of incoming equipment/material, the purchaser reserves the right to refuse product shipments and to determine the acceptability or rejection of the product received. The supplier shall be liable for all costs incurred for a product that is rejected.

10.2. The acceptance of any equipment/material shall in no way relieve the vendor from his responsibility to meet all the requirements of this specification, and it would not prevent subsequent rejection if such equipment/materials were found later to be defective.

11. Warranty

The conductor/cable shall be designed and manufactured to provide a minimum life expectancy of 40 years. The supplier/manufacturer shall guarantee that each part of the finished cable has been manufactured in accordance with the requirements of the referenced specifications and standards. The supplier/manufacturer shall agree to replace any length of conductor for two years after the date of delivery if defective material or workmanship is found during installation or if the cable fails from normal use during its first year of service free of cost for the purchaser. In either case, the supplier/manufacturer shall be given a reasonable opportunity to inspect such defects or failures. A technical report detailing the cause(s) of the defect and the corrective measures implemented to prevent recurrence shall be provided upon request of the purchaser.

12. Proposal Information

12.1. Submitted proposals must include:

a. Technical information, tests, and drawings.

b. Table of Compliance completed by the bidder with reference (see Appendix 1).

13. Table 1: Warehouse and Asset Suite Identification Number

Item	Warehouse Catalog #	Asset Suite #	Package (ft/reel)	Ultimate Strength	Strands & Class	Overall Diameter	Amp	Weight/ 1000 ft	Compatible Manufacturer (Hard Drawn Model)
2 AWG	006-82621	82621	3,000 ft (914 m)	3,050 lbf (13.57 kN)	7 & B	0.292" (7.42 mm)	230	204.9 lbs (306kg/km)	Viakon Southwire
1/0 AWG	006-01534	56082	3,000 ft (914 m)	4,752 lbf (21.14 kN)	7 & AA	0.368" (9.35 mm)	310	325.8 lbs (486 kg/km)	Viakon Southwire
4/0 AWG	006-01526	56081	1,653 ft (503 m)	9,617 lbf (42.78 kN)	19 & B	0.528" (13.41 mm)	480	653.3 lbs (974kg/km)	Viakon Southwire
300 MCM	006-01609	59361	1,165 ft (355 m)	13,510 lbf (60.10 kN)	37 & A	0.630" (16.00 mm)	590	926.3 lbs (1,381kg/km)	Viakon Southwire

— End of Specification —



Appendix

Appendix 1: Table of Compliance

Line	Description	Pass/Fail (P / F)	Comments
1	Complies with document 4350.055.		
2	Industry standards: ASTM (B1, B8), AWWA (P9, U1, T1)		
3	Bare Copper Conductor		
4	Hard Drawn		
5	Concentric Lay Stranded		
6	Strands as per Table 1.		
7	Stranding Class as per Table 1.		
8	OD as per Table 1.		
9	Ultimate Strength as per Table 1.		
10	Weight as per Table 1.		
11	Amps. capacity as per Table 1.		

NOTE: This table is only a checklist for reference. The compliance must be with the complete document. Filling out the table with “PASS” won’t be accepted as a compliance without the technical information required to certify it.











4350.055 Copper Conductor, Bare (2-19-25)

Final Audit Report

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