Document Title:

Aluminum Conductor, 556.5 kcmil, 24/7, ACSS/AW, Bare

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Version History

Date	Revision Comments
Feb. 22, 2022	PREPA to LUMA Format for Item 042-01075. (Ver. 6)
Feb. 10, 2023	Cover Page and Table of Compliance (TOC) added. General Format modifications.

Warehouse Catalog	Item Version	Date
042-01075	7	02/10/2023

Equipment Specification
Document No.: 4350.067
Item No.: 042-01075
Asset Suite: 53694
Originating Department: Distribution Engineering

Aluminum Conductor, 556.5 kcmil 24/7, ACSS/AW, Bare

1. Introduction

This is a general specification that covers the minimum requirements for aluminum conductor steel supported (ACSS/AW) 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 material.

2. Special Requirements

2.1. Samples shall be furnished as requested by LUMA Energy. All documented testing required by applicable specifications and standards shall be submitted with product samples, including mechanical drawings, prior to approval. Vendors that have supplied this material to PREPA/LUMA on previous orders, will not have to furnish samples at bid opening. With the exception if any material or design changes were made to an approved product, vendor must re-submit sample to the Material Specification engineer for approval before shipping. The material will be received at the LUMA's general warehouse (011) at Palo Seco, Puerto Rico. Shipping will include transportation and unloading at the indicated warehouse.

2.2. Product shall be manufacture in accordance with the latest issue ASTM, NEMA, IEEE and ANSI specification. When conflicts occur between Purchaser's specifications and the ASTM, NEMA, IEEE, or ANSI specifications, the Purchaser's specification shall prevail. The product shall be furnished as described here in this specification or as amended by the purchase order. Any changes or updates to the Supplier's procedures, quality routines, and/or inspection layout shall be liable for all costs incurred for product that is refused/rejected.

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

2.4. Vendor shall submit two (2) quotes: one for conductor on steel reel and another for conductor on wood reel. See detail of reels in section 6.

Aluminum Conductor, 556.5 kcmil 24/7, ACSS/AW, Bare

3. Quantity/Literature

Descriptive and technical literature must be supplied by vendor at time of bidding. This literature may include, but is not limited to details of material, drawings, documented testing, and instructions for use and installation. Failure to submit documents on time will cause bidder disqualification. For products described in this specification as requiring qualification, awards will be made only for such products that, prior to the time for opening of bids, had been tested and/or approved by LUMA. Evidence of PREPA's and/or LUMA Energy's approval of the equipment or material shall be supplied by vendor if requested by LUMA Energy.

4. Markings

4.1. Conductor 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.

4.2. Packaging labels and tags shall be waterproof.

5. Equal or Approved Equal to

5.1. Nehring (Parakeet/ACSS/AW).

5.2. Southwire (Parakeet/ACSS/AW).

6. Packaging

6.1. All material and equipment 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. Shall be shipped in a non-returnable new reel containing 4,000 ft ± 10% (1,219 m ± 10%) of continuous conductor. Approximately 2,863 lbs ± 10% (1,298.9 kg ± 10%) of conductor. Conductor won't be accepted by sections.

6.3. 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 consisting 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 will be accepted.

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. Manufacturer 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. Manufacturer shall protect cable 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)

Package: 4,000 ft ± 10% (1,219 m ± 10%) per reel or as requested by LUMA. Approximately 2,748 lbs ± 10% (1,246.5 kg ± 10%) per reel.

8. Acceptance Criteria

8.1. Test required: certified by external laboratories.

8.2. Latest applicable codes, standards, and other regulations: ANSI/ASTM (B502, B609, B856, B958), AWPA (P9, U1 & T1).

8.3. NEMA Standard Publication No. WC 26: Binational Wire and Cable Packaging Standard.

9. Description

9.1. This cable is used for special purpose in construction and maintenance of electrical transmission and distribution system lines.

9.2. The ACSS/AW shall consist of a composite concentric lay stranded aluminum bare conductor in accordance with ANSI/ASTM B856 with a center aluminum-clad steel core in accordance with ASTM B502 to provide more resistance to corrosion than ACSS.

9.3. Shall be suitable to operate continuously at temperatures up to 250°C without losing strength.

9.4. For basic description see Table 1.

9.5. Code Word (Size): Parakeet/ACSS/AW (556.5 kcmil).

9.6. Current Rating: 1,323 A.

9.7. Material:

a. Two (2) layers of aluminum 1350-O wire in accordance with ASTM B609 around the center core.

b. Center core shall be steel with an aluminum coating (aluminum-cladding steel) as per ASTM B502.

9.8. Strands:

a. Twenty-four (24) aluminum wires 0.1523" (3.87 mm) diameter.

b. Seven (7) steel wires 0.1015" (2.58 mm) diameter.

9.9. Overall diameter: 0.914" (2.32 cm)

9.10. Ultimate strength: 14,600 lbf (64.9 kN)

9.11. Weight: 687 lbs/k ft (1,024 kg/km)

10. Inspection

The acceptance of any material or equipment 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 materials were found later to be defective.

11. Warranty

The conductor shall be designed and manufactured to provide a minimum life expectancy of 40 years. Replacement costs associated with premature conductor failure due to inadequate design of faulty manufacturing is to be the responsibility of the Supplier. The manufacturer shall guarantee that each part of the finished conductor has been manufactured in accordance with requirements of the referenced specifications and standards and that the finished conductor complies with the same requirements. The supplier/manufacturer shall agree to replace any length of conductor for two years after date of delivery if defective material or workmanship is found during installation or if the conductor fails from normal use during its first year of service. In either case, the supplier/manufacture shall be given a reasonable opportunity to inspect such defect or failure. 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.

Aluminum Conductor, 556.5 kcmil 24/7, ACSS/AW, Bare

12. Table 1: Warehouse and Asset Suite Identification Number

Item Size (kcmil)	Warehouse Catalog #	Asset Suite #	Package Per Reel (Approx.)	Ultimate Strength	Strands	Amp Rating	Overall Diameter	Weight lbs/1k ft	Suggested Manufacturer & Model
556.5	042-01075	53694	4,000 ft (1.2 km)	14,600 lbf (64.9 kN)	24/7	1,323	0.914”	687.0 (1,024 kg/km)	Southwire Parakeet/ACSS/AW

— End of Specification —

Aluminum Conductor, 556.5 kcmil 24/7, ACSS/AW, Bare

Appendix

Aluminum Conductor, 556.5 kcmil 24/7, ACSS/AW, Bare

Appendix 1: Table of Compliance

Line	Criteria	Description	Pass/Fail (P / F)	Comments
1	Specification	The Proponent complies with the corresponding specification document 4350.067.		
2	Industry Standards	The Proponent complies with the industry standards established in the specification document. (ANSI/ASTM, AWPA)		
3	Material	• External Layers: Aluminum 1350-O • Center core: Aluminum-Clad Steel		
4	Electrical Properties	Current Rating: 1,323 A		
5	Product Requirement	• ACSS/AW		
		• Two layers concentric lay stranded around a center steel core covered by an aluminum coating (aluminum-cladding steel).		
		• Ultimate Strength: 14,600 lbf		
		• Overall Diameter: 0.914”		
		• Strands: 24/7		

4350.067 Al Conductor ACSS-AW 556 kcmil (2-10-23)

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