People first. Safety always.	Document Title: **Aluminum Conductor, AAAC, Bare**	
	Document Type: **50 - MATERIAL SPECIFICATION**	Document No.: **4300.50.059**
Department: **Distribution Engineering**	Version: **05**	Effective Date: Jan 21, 2026
For others, specify here		

Shared document with: N/A

** Select the Departments impacted by the document (If apply)*

For others, specify here

Author Miguel J. Rios López, PE (Lic. 16636) General Engineer, Distribution Standards & Materials	Signature and Date: Jan 21, 2026
Reviewer Rodolfo A. Flores Ortiz, PE (Lic. 27131) Senior Engineer, Distribution Standards & Materials	Signature and Date: Jan 21, 2026
Approver Ricardo Castro Gómez, PE (Lic. 12135) Manager, Distribution Standards & Materials	Signature and Date: Jan 21, 2026

Management Approval (If apply)

Approver Name Position	Signature and Date:

Related/Referenced Documents

N/A

Version History

Version	Date	Revision
01	Feb. 22, 2022	PREPA to LUMA Format for Item 042-01018.
02	Jul. 15, 2022	Item 042-52171 created.
03	Apr. 03, 2023	Cover Page and Table of Compliance (TOC) added. General Format modifications and 4 Items created (042-84580, 042-84581, 042-84582 & 042-84583).
04	Nov. 07, 2024	General format modifications, TOC updated, Sections 4 and 8 modified, and sections order rearranged.
05	Jan. 21, 2026	General format modifications. Item 042-84583 removed. Document number changed from 4350.059 (Legacy Number) to 4300.50.059 (New Engineering Records Nomenclature Number).

Item Version History

Warehouse Catalog #	Asset Suite #	Version	Date
042-84580	84580	3	1/21/2026
042-84581	84581	3	1/21/2026
042-84582	84582	3	1/21/2026
042-01018	53689	5	1/21/2026
042-52171	52171	4	1/21/2026

Table of Contents

1. Introduction

This is a general specification that covers the minimum requirements for bare all aluminum-alloy conductors (AAAC) to be used in the distribution and transmission systems 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 characteristics of the product.

2. Special Requirements

Samples shall be furnished as requested by LUMA Energy. Vendors that have supplied this product to LUMA on previous orders will not have to furnish samples at bid opening. The product will be received at LUMA's general warehouse (011) at Palo Seco, Puerto Rico. Shipping will include transportation and unloading at the indicated warehouse.

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 manufacturer and model see Table 1. These models are examples of the product 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. Conductors' reels shall be marked outside with LUMA Energy's purchase order, item number, description of wire & specification date, code name, net length & size, net & gross weights, and manufacturer's name & lot/production number.

5.2. Packaging labels and tags shall be waterproof.

6. Packaging

6.1. All products 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 steel 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. The reels shall be protected against damage in ordinary handling and shipping.

6.9. Manufacturers shall protect the upper layers with pieces of wood along the transverse section of the reel for conductor protection.

6.10. Manufacturers shall protect conductor ends from water entrance or damage by means of an adequate seal.

6.11. NEMA level 2 wrapping of protective material shall be used for the complete reel.

6.12. Other types of reels will be evaluated by Luma Energy. The supplier must submit their options with details at bid opening.

7. Number Per Package (Logistics)

As per Table 1 or as requested by LUMA.

8. Acceptance Criteria

8.1. Test required: certified by external qualified 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 B398: For Aluminum-Alloy 6201-T81 and 6201-T83 wire for electrical purposes.

b. ASTM B399: For concentric-lay-stranded conductors, made from round aluminum-alloy 6201-T81 (hard: solution heat-treated, cold worked, and then artificially aged) wires, for electrical purposes.

c. AWPA P9: For solvents and formulations for organic preservative systems.

d. AWPA U1 & T1: For wood treatment.

e. NEMA WC 26: Binational Wire and Cable Packaging Standard.

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. This conductor is used for construction and maintenance of electrical distribution system lines. Could be used as a replacement for CU Bare Conductors and ACSR Bare Conductors due to their high resistance to corrosion and high strength to weight ratio (see Table 2 for equivalences).

9.2. Material: Aluminum alloy 6201-T81 round conductor wire conforming with ANSI/ASTM B398.

9.3. Shall consist of a concentric lay stranded aluminum bare conductor in accordance with ANSI/ASTM B399.

9.4. For Size, Strands, Diameter, Weight, Ultimate Strength, and Amp Rating see Table 1.

10. Inspection

10.1. Upon inspection of incoming products, the purchaser reserves the right to refuse their 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 product 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 products were found later to be defective or out of compliance.

11. Proposal Information

11.1. Submitted proposals must include:

a. Technical information, drawings, and tests.

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

12. 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.

13. Table 1: Warehouse and Asset Suite Identification Number

Item Size (kcmil)	Warehouse Catalog #	Asset Suite #	Package Per Reel (Approx.)	Approx. Ultimate Strength	Strands	Amp Rating	Overall Diameter	Weight lbs./1k ft	Compatible Manufacturer & Model
123.3	042-84580	84580	2,000 ft (0.61 km)	4,460 lbf (19.8 kN)	7	256	0.398" (1.0 cm)	115.0 (172 kg/km)	Southwire (Azusa)
195.7	042-84581	84581	2,000 ft (0.61 km)	6,790 lbf (30.2 kN)	7	342	0.502" (1.3 cm)	182.5 (272 kg/km)	Southwire (Amherst)
394.5	042-84582	84582	2,000 ft (0.61 km)	13,300 lbf (59.1 kN)	19	532	0.721" (1.8 cm)	367.9 (549 kg/km)	Southwire (Canton)
652.4	042-01018	53689	1,850 ft (0.56 km)	21,900 lbf (97.4 kN)	19	729	0.927" (2.4 cm)	608.4 (907 kg/km)	Southwire (Elgin)
927.2	042-52171	52171	2,000 ft (0.61 km)	30,500 lbf 135.7 kN)	37	908	1.108" (2.8 cm)	864.4 (1,289 kg/km)	Southwire (Greeley)

14. Table 2: AAAC, ACSR, and CU Bare Conductors Size Equivalences by Strands, Amp Rating, Strength, Weight, and Overall Diameter (OD)

Conductor	Characteristics						
AAAC	**Size**	**123.3 kcmil**	**195.7 kcmil**	**394.5 kcmil**		**652.4 kcmil**	**927.2 kcmil**
	Strands	**7**	**7**	**19**		**19**	**37**
	Amps	**256 A**	**342 A**	**532 A**		**729 A**	**908 A**
	Strength	**4,460 lbf**	**6,790 lbf**	**13,300 lbf**		**21,900 lbf**	**30,500 lbf**
	Weight	**115 lbs/1k ft**	**182.5 lbs/1k ft**	**367.9 lbs/1k ft**		**608.4 lbs/1k ft**	**864.4 lbs/1k ft**
	OD	**0.398”**	**0.502”**	**0.721”**		**0.927”**	**1.108”**
ACSR	**Size**	1/0 AWG	3/0 AWG	266.8 kcmil	*	556.5 kcmil	795.0 kcmil
	Strands	6/1	6/1	26/7		24/7	26/7
	Amps	242 A	315 A	475 A		721 A	907 A
	Strength	4,380 lbf	6,620 lbf	11,300 lbf		19,800 lbf	31,500 lbf
	Weight	145.3 lbs/1k ft	230.8 lbs/1k ft	367.3 lbs/1k ft		716.8 lbs/1k ft	1,094 lbs/1k ft
	OD	0.398”	0.502”	0.642”		0.914”	1.108”
CU	**Size**	2 AWG	1/0 AWG	4/0 AWG	300 kcmil	*	*
	Strands	7	7	19	37		
	Amps	230 A	310 A	480 A	590 A		
	Strength	3,050 lbf	4,752 lbf	9,617 lbf	13,510 lbf		
	Weight	204.9 lbs/1k ft	325.8 lbs/1k ft	653.3 lbs/1k ft	926.3 lbs/1k ft		
	OD	0.292”	0.373”	0.528”	0.630”		

* Not required by LUMA Construction Standards.

- End of Specification -

Appendix

Appendix 1: Table of Compliance

Line	Description	Pass/Fail (P / F)	Comments
1	Compliance with the document 4300.50.059		
2	Industry standards: ASTM (B398 & B399). If different ones are used, information showing compatibility is required.		
3	Tech. info., drawings, and tests provided.		
4	AAAC Bare		
5	6201-T81 Aluminum Alloy		
6	Concentric Lay Stranded		
7	Ultimate Strength as per Table 1.		
8	Strands as per Table 1.		
9	Ampacity Rating as per Table 1.		
10	Overall Diameter as per Table 1.		
11	ft per reel as per Table 1.		
12	Wood & Steel reels options provided.		

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.