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Aluminum Conductor, ACSR/GA, Bare

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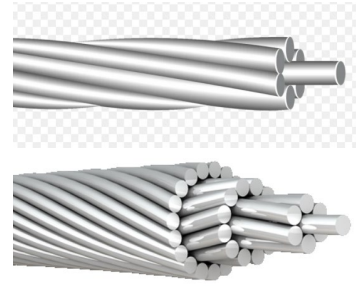
Version History

Date	Revision Comments
Nov. 16, 2021	PREPA to LUMA Format for 042-00937, 042-00960, 042-00945, 042-00952, and 042-00978 (Ver. 8, 6, 7, 11, 4)
Feb. 22, 2022	General Format Modified. (Ver. 9, 7, 8, 12, 5)
May. 05, 2022	Item 042-00978 removed from this document and item 042-82942 created. (Ver. 1). Signature Format Modified
Jan. 23, 2023	Cover Page and Table of Compliance (TOC) added.
Aug. 03, 2023	General format and TOC modifications. Item 042-82942 removed (replaced by Item 042-01075 on document 4350.067). * Item 042-00952 shared with Transmission.

Warehouse Catalog	Item Version	Date
042-00937	11	08/03/2023
042-00960	9	08/03/2023
042-00945	10	08/03/2023
* 042-00952	14	08/03/2023



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1. Introduction

This is a general specification that covers the minimum requirements for an aluminum conductor ACSR/GA (see Table 1 for sizes) to be used in the distribution and transmission 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. 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 equipment/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 equipment/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 manufactured 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 a product that is refused/rejected.
- 2.3. 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 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.



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3. 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/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. Compatible with

- 5.1. Nehring electrical works company
- 5.2. American Wire Group
- 5.3. Southwire
- 5.4. 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.

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. Shall be shipped in a continuous way in a non-returnable new reel (refer to Table 1 for package quantity by conductor type). Conductors 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.



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- 6.5. Reels made of steel with a finishing consisting of a high-pressure hot phosphate wash and bonding agent, zinc chromate-iron oxide primer and final enamel coat to provide the necessary extra durability shall 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 cable shall be firmly and properly secured to reel.
- 6.8. Reels shall be protected against damage in ordinary handling and shipping.
 - a. The manufacturer shall protect the upper layers with pieces of wood along the transverse section of reel for conductor protection with NEMA level 2 wrapping of protective material.
 - b. The 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: see Table 1 for quantity or as requested by LUMA.

8. Acceptance Criteria

- 8.1. Test required: certified by external laboratories.
- 8.2. Latest applicable codes, standards, and other regulations: ANSI/ASTM (B230, B231, B232, B498), AWWA (P9, U1, T1).
- 8.3. NEMA Standard Publication No. WC 26: Binational Wire and Cable Packaging Standard.

9. Description

- 9.1. These conductors are used for construction and maintenance of electrical distribution lines.
- 9.2. Shall consist of a concentric lay stranded aluminum conductor as per ASTM B231 and steel reinforced (ACSR), bare stranded, in accordance with ANSI/ASTM B232.
- 9.3. Material:
 - a. Aluminum 1350 H19 round conductor wire conforming with ANSI/ASTM B230.
 - b. Zinc coated, class-A galvanized steel core wire conforming with ANSI/ASTM B498.
- 9.4. Class AA for construction purposes.
- 9.5. For strands, diameters, weight, and ultimate strength see Table 1.



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10. Inspection

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/material 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 or 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 the 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/manufacturer 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.

12. Proposal Information

12.1. Submitted proposals must include:

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



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13. Table 1: Warehouse and Asset Suite Identification Number

Item	Warehouse Catalog #	Asset Suite #	Package	Minimum Ultimate Strength	Strands & Diameters	Overall Diameter	Weight/ 1000 ft	Code Name
1/0 AWG	042-00937	56725	6,200 ft (1.9 km) per reel approx.	4,380 lbf (19.48 kN)	6 / 1 0.1327" each (3.37 mm) each	0.398" (1.01 cm)	145.3 lbs (216kg/km)	Raven
3/0 AWG	042-00960	56728	7,800 ft (2.4 km) per reel approx.	6,620 lbf (29.45 kN)	6 / 1 0.1672" each (4.25 mm) each	0.502" (1.28 cm)	230.8 lbs (343kg/km)	Pigeon
266.8 MCM	042-00945	56726	10,350 ft (3.2 km) per reel approx.	11,240 lbf (50 kN)	26 / 7 0.1013/0.0788" (2.57/2 mm)	0.642" (1.63 cm)	367.3 lbs (546kg/km)	Partridge
556.5 MCM	* 042-00952	56727	2,500 ft (762 m) per reel (minimum)	19,800 lbf (88.07 kN)	24 / 7 0.1523/0.1015" (3.86/2.58 mm)	0.914" (2.32 cm)	716.8 lbs (1065kg/km)	Parakeet

* The item 042-00952 is also used in the 38kV transmission system.

— End of Specification —



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Appendix



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Appendix 1: Table of Compliance

Line	Criteria	Description	Pass/Fail (P / F)	Comments
1	Specification	The Proponent complies with the corresponding specification document 4350.062.		
2	Industry Standards	The Proponent complies with the industry standards established in the specification document. (ASTM)		
3	Type	ACSR, Class AA		
4	Material	Aluminum 1350 H19		
		Core: Zinc Coated, Class A Galvanized Steel		
5	Product Requirement	Concentric Lay Stranded Aluminum Conductor Steel Reinforced		
		Bare Conductor		
6	Code Name	As per Table 1		
7	Strands	As per Table 1		
8	Overall Diameter	As per Table 1		
9	Ultimate Strenght	As per Table 1		












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Final Audit Report

2023-08-07

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