



Kenya Power

TITLE:

**SPECIFICATION FOR
ALUMINIUM BINDING WIRE**

Doc. No. KP1/6C/13/TSP/06/035

Issue No. 1

Revision No. 0

Date of Issue 2016-06-3

Page 1 of 10

TABLE OF CONTENTS

0.1 Circulation List

0.2 Amendment Record

FOREWORD

1. SCOPE
2. REFERENCES
3. TERMS AND DEFINITIONS
4. REQUIREMENTS
5. TESTS AND INSPECTION
6. MARKING, LABELLING AND PACKING

ANNEX A: *Guaranteed Technical Particulars (to be filled and signed by the Manufacturer and submitted together with copies of manufacturer's catalogues, brochures, drawings, technical data, sales records, customer reference letters, details of manufacturing capacity & experience and copies of type test certificates and type test reports for tender evaluation)*

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Date of Issue 2016-06-3

Page 2 of 10

0.1 Circulation List

COPY NO.	COPY HOLDER
1	Manager, Standards
Electronic copy (pdf) on KPLC Server (currently: Network→stima-fprnt-001→techstd&specs)	

0.2 Amendment Record

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
Issue 1 Rev0	2015-05-08	New issue	S. Nguli	P. Kimemia

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Date of Issue 2016-06-3

Page 3 of 10

FOREWORD

This specification has been prepared by the Standard Department of the Kenya Power and Lighting Company Limited (abbreviated as KPLC) and it lays down requirements for aluminum binding wire for use on overhead power lines. It is intended for use by the company in purchasing aluminum binding wire

It shall be the responsibility of the Manufacturer to ensure adequacy of the design and good engineering practice in the manufacture of the aluminium binding wire for KPLC.

1. SCOPE

1.1 This specification is for Aluminium Binding Wire for use on Overhead Power Lines operating at voltages of up to 33kV 50Hz.

1.2 The specification covers the following:

- (a) Aluminium Binding Wire, Bare
- (b) Aluminium Binding Wire, PVC Covered

2. REFERENCES

The following documents were referred to during the preparation of this specification. In case of conflict, the provisions of this specification shall take precedence.

BS 2627: Specification for Wrought Aluminium for Electrical Purposes.

BS 1475: Specification for Wrought Aluminium and aluminium alloys for general engineering purposes – wire.

BS 7655-3.1: Specification for insulating and sheathing materials for cables. PVC insulating compounds. Harmonized types

BS 6746: Specification for PVC insulation and sheath of electric cables.

ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories

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TITLE: SPECIFICATION FOR ALUMINIUM BINDING WIRE	Doc. No.	KP1/6C/13/TSP/06/035
	Issue No.	1
	Revision No.	0
	Date of Issue	2016-06-3
	Page 4 of 10	

3. TERMS AND DEFINITIONS

For the purpose of this specification, definitions given in the reference standards shall apply.

4. REQUIREMENTS

4.1 Service Conditions

The aluminum binding wire shall be suitable for continuous outdoor operation in tropical areas with the following conditions:

- a) Altitude: up to 2,200m above sea level;
- b) Temperature: average of +30°C with a minimum of -1°C and max +40 °C;
- c) Humidity: up to 95%;
- d) Pollution: Design pollution level to be taken as “Heavy” (Pollution level III) for inland and “Very Heavy” (Pollution level IV) for coastal applications in accordance with IEC 60815.
- e) Isokeraunic level: 180 thunderstorm days per year

4.2 Materials and Construction

- 4.2.1 The binding wire shall be 3.65 mm (SWG 9) diameter plain aluminium to BS 2627, soft drawn for use with bare All Aluminium Conductor and Aluminium Conductor Steel Reinforced.
- 4.2.2 Aluminum wires shall be material G1E in the H9 condition as specified in BS 2627
- 4.2.3 Aluminium wires shall be uniform in quality, circular in cross section, clean, smooth and free from harmful defects, splinter irregularities and brittle places.
- 4.2.4 The aluminium binding wire for use with PVC covered conductors shall be covered with 0.5mm thick black PVC to BS 6746 Type T1.
- 4.2.5 The color of the covering shall be BLACK; all other properties shall be as per BS 6746

Issued by: Head of section, standards Development	Authorized by: Manager standards
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	TITLE: SPECIFICATION FOR ALUMINIUM BINDING WIRE	Doc. No.	KP1/6C/13/TSP/06/035
		Issue No.	1
		Revision No.	0
		Date of Issue	2016-06-3
		Page 5 of 10	

4.3 WORKMANSHIP

4.3.1. The aluminium binding wire shall be cleaned and free of imperfections, such as pipes, laps, cracks, kinks, bends, twists, and other injurious defects.

4.3.2. Higher quality of work shall be maintained in drawing the wire and fabrication of the aluminium binding wire.

4.3.3. All machines and equipment used for this purpose of redrawing shall be properly cleaned, free from any copper residues.

4.4 QUALITY MANAGEMENT SYSTEM



4.4.1 The supplier shall submit a quality assurance plan (QAP) that will be used to ensure that the design, material, workmanship, tests, service capability, maintenance and documentation, will fulfill the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfill the requirements of ISO 9001:2008.

4.4.2 The Manufacturer's Declaration of Conformity to reference standards and copies of quality management certifications including copy of valid and relevant ISO 9001: 2008 certificate shall be submitted with the tender for evaluation.

4.4.3 The bidder shall indicate the delivery time of the Aluminium Binding Wire, manufacturer's monthly and annual production capacity and experience in the production of the type and size of Aluminium Binding Wire being offered. A detailed list & contact addresses (including e-mail) of the manufacturer's previous customers outside the country of manufacture for the Aluminium Binding Wire sold in the last five years together with reference letters from four of the customers shall be submitted with the tender for evaluation.

5. TESTS AND INSPECTION

5.1 The Aluminium Binding Wire shall be tested and inspected in accordance with the requirements of this specification and BS 2627, BS 1475 and BS 6746 as applicable.

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	Issue No.	1
	Revision No.	0
	Date of Issue	2016-06-3
	Page 6 of 10	

5.2 It shall be the responsibility of the manufacturer to perform or to have performed the tests specified and whatever other tests normally performed at works.

5.3 Certified true copies of previous Test Reports from an ISO/IEC 17025 accredited Laboratory recognized by the International Laboratory Accreditation Co-operation (ILAC) shall be submitted with the tender for the purpose of technical evaluation, all in the English Language.

6.0 Packing and Marking

6.1 The finished Aluminium Binding Wire shall be packed in coils such as to prevent damage during transportation and storage. Each coil shall be 100m in length.

6.2 The following information shall be marked legibly and in a permanent manner on the package:

- a) The manufacturer's name
- b) The type of product
- c) The length, in metres
- d) The mass, in kilogram
- e) The standard to which the product complies
- f) "Property of KPLC"

7.0 DOCUMENTATION

7.1 The bidder shall submit its tender complete with technical documents required by Annex A (Guaranteed Technical Particulars) for tender evaluation. The documents to be submitted (all in English language) for tender evaluation shall include the following:

- a) Guaranteed Technical Particulars fully filled and signed by the manufacturer;
- b) Copies of the Manufacturer's catalogues, brochures, drawings and technical data;
- c) Sales records for previous five years and reference letters from at least four of the customers;
- d) Details of manufacturing capacity and the manufacturer's experience;
- e) Copies of required type test certificates and type test reports by a third party testing laboratory accredited to ISO/IEC 17025;
- f) Copy of accreditation certificate to ISO/IEC 17025 for the third party testing laboratory;
- g) Manufacturer's warranty and guarantee;

Issued by: Head of section, standards Development	Authorized by: Manager standards
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	TITLE:	Doc. No.	KP1/6C/13/TSP/06/035
	SPECIFICATION FOR ALUMINIUM BINDING WIRE	Issue No.	1
		Revision No.	0
		Date of Issue	2016-06-3
		Page 7 of 10	

h) Manufacturer's letter of authorization, copy of the manufacturer's ISO 9001:2008 certificate and other technical documents required in the tender.

7.2 The successful bidder (supplier) shall submit the following documents/details (from the manufacturer as per tender) to The Kenya Power & Lighting Company for approval before manufacture:

- a) Guaranteed Technical Particulars fully filled and signed by the manufacturer;
- b) Design drawings & construction details of the Aluminium Binding Wire;
- c) Quality assurance plan (QAP) that will be used to ensure that the design, material, workmanship, tests, service capability, maintenance and documentation will fulfill the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfill the requirements of ISO 9001:2008;
- d) Test Program to be used after manufacture;
- e) Marking details and method to be used in marking each conductors;
- f) Manufacturer's undertaking to ensure adequacy of the design, adherence to applicable regulations, standards and specification, ensure good workmanship and good engineering practice in the manufacture of the Aluminium Binding Wire for The Kenya Power and Lighting Company Limited;
- g) Packaging details (including packaging materials and marking and identification of component packages).

NOTE: *The drawings to be submitted by the supplier to KPLC for approval before manufacture shall be in standard format clearly indicating the drawing number, dimensions, parts list with material details and quantities, standard of manufacture, ratings, approval details and identity of the manufacturer (as per manufacturer's authorization submitted during tendering).*

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Doc. No.	KP1/6C/13/TSP/06/035
Issue No.	1
Revision No.	0
Date of Issue	2016-06-3
Page 8 of 10	

ANNEX A: Guaranteed Technical Particulars (to be filled and signed by the *Manufacturer and submitted together with relevant copies of the Manufacturer's catalogues, brochures, drawings, technical data & calculations, sales records for past five years, four customer reference letters, details of manufacturing capacity, the manufacturer's experience, copies of complete type test reports and accreditation certificate to ISO/IEC 17025 for the third party testing laboratory for tender evaluation, all in English Language*)

BIDDERS NAME & ADDRESS

TENDER NO

Description		Bidders offer
Name of Manufacturer & Country of manufacture		State
Type/Model Reference Number		State
1.	Scope	
	Type and Size	
2.	Reference standards	State
3.	Terms and definitions	State
4.	Requirements	State
4.1	Service Conditions	State
4.2.1	Material Aluminum	Designation G1E in the H9 condition of BS 2627
4.2.2		Conductor size
		Standard diameter , mm
		Cross sectional area, mm ²
		Mass per km , kg
		Standard resistance at 20 ⁰ C, Ω
		Resistivity at 20 ⁰ C, max, μΩcm
		Minimum breaking load, N
	Density, g/cm ³	
4.2.3	Uniformity and cross section	State
4.2.4	PVC covered conductor	Insulation Thickness
		Standard complied
4.2.5	Colour and other properties	Colour
		Other properties

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	TITLE: SPECIFICATION FOR ALUMINIUM BINDING WIRE	Doc. No.	KP1/6C/13/TSP/06/035
		Issue No.	1
		Revision No.	0
		Date of Issue	2016-06-3
		Page 9 of 10	

	Description	Bidders offer
4.3	Workmanship To be demonstrated by quality of conductor	State
4.4	Quality Management System	
4.4.1	Quality Assurance Plan to be based on ISO 9001:2008	Provide
4.4.2	Declaration of conformity to reference standard	State
	Copy of ISO 9001:2008 certificate submitted	Provide
4.4.3	Delivery time	Provide
	Monthly & annual production capacity	Provide
	List of previous customers	Provide
	Reference letters from at least four previous customers	Provide
5.1	Test standards and responsibility of carrying out tests	provide
5.2	Type test certificates and reports together with accreditation certificates	provide
5.3	List of Type Test Reports submitted with tender	provide
5.4	Acceptance tests to be witnessed by KPLC at factory before shipment	provide
5.5	Test reports to be submitted by supplier to KPLC for approval before shipment	provide
5.6	Replacement of rejected conductors	provide
6.1	Marking	provide
6.2	Packing	provide
7.1	Documents submitted with tender	provide
7.2	Documents to be submitted by supplier to KPLC for approval before manufacture	provide
8.0	Quality Management System	provide
	Quality Assurance Plan	provide
	Copy of ISO 9001:2008 Certificate	provide
	Manufacturer's experience	provide
	Manufacturing Capacity (units per month)	provide
	List of previous customers	provide
	Customer reference letters	provide
	Manufacturer's Guarantee and Warranty	provide
List catalogues, brochures, technical data and drawings submitted to support the offer	provide	

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	Issue No.	1
	Revision No.	0
	Date of Issue	2016-06-3
	Page 10 of 10	

	Description	Bidders offer
9.0	Statement of compliance to specification (indicate deviations if any & supporting documents)	provide

NOTE:

- 1) *Bidders shall give full details of the offered values of the items on order as per Annex A. The details provided shall conform to the test reports and their certificates as required by clause 5.2., well labeled drawings complete with dimensions, catalogues or brochures for the purpose of tender evaluation.*
- 2) *Bidder who shall have not complied by this requirement in bullet 1 shall automatically be disqualified for bidding this item.*

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Manufacturer's Name, Signature, Stamp and Date

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