



The Kenya Power & Lighting
Co. Ltd.

TITLE:

**SPECIFICATION FOR STEEL
EARTH WIRE (AERIAL)**

Doc. No.

KPLC1/3CB/TSP/06/030

Issue No.

1

Revision
No.

0

Date of
Issue

2007-08-15

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Issued by: Research and Development Department

Signed:

Date: 2007-08-15

Authorized by: Chief Manager – PR&PM

Signed:

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0.1 Circulation List

COPY NO.	COPY HOLDER
1	Supplies Manager
2	Stores & Stock Control Manager
3	Transmission Manager
4	Distribution Manager
5	Research & Development Manager
6	Assistant Manager, Technical Audit

0.2 Amendment Record

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)

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FOREWORD

This specification has been prepared by the Research and Development Department of The Kenya Power and Lighting Company Limited (KPLC) and it lays down requirements for Steel Earth Wire (aerial). It is intended for use by KPLC in purchasing the steel earth wire.

It shall be the responsibility of the manufacturer to ensure adequacy of the design and good engineering practice in the manufacture of the steel earth wire for KPLC. The manufacturer shall submit information which confirms satisfactory service experience with products which fall within the scope of this specification.

1. SCOPE

1.1 This standard specifies requirements for steel wires for use as aerial earth wire and for similar purposes on overhead power transmission and distribution lines.

1.2 The specification covers the following sizes:

- 7/2.00/700 (7/14 SWG)
- 7/2.65/700 (7/12 SWG)

2. REFERENCES

The following documents were referred to during the preparation of this specification; in case of conflict, the requirements of this specification shall take precedence.

BS 183: Specification for general purpose galvanized steel wire strand.

BS 443: Specification for testing zinc coatings on steel wire and for quality requirements.

3. TERMS AND DEFINITIONS

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

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4. REQUIREMENTS

4.1 SERVICE CONDITIONS

The steel earth wire shall be suitable for continuous use outdoors in tropical areas at altitudes of up to 2200m above sea level, humidity of up to 90%, average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C and heavy saline conditions along the coast.

4.2 MATERIALS AND CONSTRUCTION

4.2.1. The steel earth wire shall be manufactured in accordance with BS 183. The finished strand and the individual wires shall be of uniform quality and have the properties and characteristics as specified in this specification.

4.2.2. The galvanized steel wires used in the construction of the steel earth wire shall comply with the requirement of BS 443.

4.2.3. The outer wires of all strands shall have a right-hand lay (Z).

All wires shall be stranded with uniform tension. Stranding shall be sufficiently close to ensure no appreciable reduction in diameter when stressed to 10% of the specified wire strength.

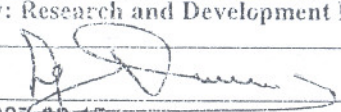

4.2.4. The wires shall be concentrically twisted with a uniform pitch of not less than 12 nor more than 18 times the specified nominal overall diameter of the strand.

4.2.5. SIZES

The steel earth wire shall be of the following characteristics as per BS 183:

SIZE	GRADE	APPROXIMATE OVERALL DIAMETER	MINIMUM BREAKING LOAD	LENGTH OF STRAND WITHOUT JOINT
7/2.00 (7/14 SWG)	700	6.0mm	15.4kN	2300m
7/2.65 (7/12 SWG)	700	8.0mm	27kN	2300m

5. TESTS AND INSPECTION

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- 5.1 Tests shall be done in accordance with the requirements of this specification, BS 183 and BS 443. It shall be the responsibility of the manufacturer to perform or to have performed all the tests specified.
- 5.2 Certified true copies of previous test reports by the relevant International or National Testing/Standards Authority of the country of manufacture (or ISO/IEC 17025 accredited laboratory) shall be submitted with the offer for evaluation (all in English Language). A copy of accreditation certificate for the laboratory shall also be submitted.

Copies of test reports to be submitted shall include the following:

- 5.2.1 Verification of dimensions
5.2.2 Tensile test
5.2.3 Elongation test
5.2.4 Wrapping test
5.2.5 Galvanizing test.
- 5.3 Routine and sample test reports for the steel earth wire to be supplied shall be submitted to KPLC for approval before shipment/delivery of the goods. The tests shall be as per 5.2.1 to 5.2.5.
- 6. MARKING AND PACKING**
- 6.1 The steel earth wire shall be supplied on drums resistant to termite attack.
- 6.2 The length of steel earth wire on each drum shall be 2300m.
- 6.3 The following information shall be marked in a permanent manner on the drum:
- a) Name of the manufacturer
 - b) The designation of the strand
 - c) The minimum breaking load of the strand (in kN)
 - d) The total and net mass in kilogram.
- 6.4 Installation/handling instructions for the steel earth wire shall be submitted during delivery (all in English Language).

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ANNEX A: Technical Particulars (to be filled and signed by the Manufacturer for all clauses and submitted together with catalogues, brochures, drawings, technical data and test reports for tender evaluation)

Description	Bidder's offer
1. Service Conditions	ACS ground wire
2. Applicable Standards	ASTM B415/B416
3. Size	5.7/2.65
4. Grade	20.3%
5. Strand Overall Diameter (mm)	5.71
6. Minimum Breaking Load (kN)	21.06
7. Ultimate Breaking Strength (kN)	22.17
8. Length of Strand without Joint (m)	5000
9. Length on Drum (m)	5000
10. Marking	Comply
11. List of copies of Test Reports submitted (indicate Test and Report Number)	Comply
12. List of Routine/Sample Tests to be witnessed by KPLC Engineers at the factory and reports submitted to KPLC for approval before shipment/delivery	Comply
13. List of catalogues, brochures, technical data, and drawings submitted to support the offer.	Comply
14. List of customer sales records submitted to support the offer.	Comply

.....
Manufacturer's Name, Signature, Stamp and Date



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