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0.1 Circulation List

COPY NO.	COPY HOLDER
1	Procurement Manager
2	Manager, Design
3	Manager, Construction
4	Chief Manager, Design
5	Chief Manager, Operations

0.2 Amendment Record

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

FOREWORD

This specification has been prepared by the Research & Development Department of KPLC and the Design & Operations Departments of Rural Electrification Authority and it lays down requirements for soft drawn copper conductors for grounding electrical systems. It is intended for use by KPLC/REA in purchasing the cables.

It shall be the responsibility of the manufacturer to ensure adequacy of the design and good engineering practice in the manufacture of the soft drawn copper conductors for KPLC/REA. The manufacturer shall submit information which confirms satisfactory service experience with products which fall within the scope of this specification.

1. SCOPE

This specification is for plain bare soft drawn copper conductors for grounding electrical systems.

The specification covers bare and PVC covered conductors.

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.

IEC 60228: Conductors of insulated cables.

IEC 60502-1: Power Cables with extruded insulation and their accessories for rated voltages from 1kV (Um=1.2kV) up to 30kV (Um=36kV)- Part 1: Cables for rated voltages 1kV (Um=1.2kV) and 3kV (Um=3.6kV)

3. TERMS AND DEFINITIONS

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

4. REQUIREMENTS

4.1 Service Conditions

4.1.1 Operating Conditions

The soft drawn copper conductors shall be suitable for continuous operation outdoors in tropical areas and average ambient temperature of +30ºC with a minimum of -1ºC and a maximum of +40ºC.

4.2 Materials and Construction

4.2.1 The soft drawn copper conductors shall be suitable for grounding electrical systems where high conductivity and flexibility are required.

4.2.2 The conductors shall be as per IEC 60228. Sizes and electrical characteristics shall be in accordance with clause 4.3.

4.2.3 PVC covering shall be type PVC/A as per IEC 60502-1. The nominal thickness shall be in accordance with IEC 60502-1 (same values given in clause 4.3).

4.3 Sizes

Nominal cross-sectional area mm²	Number & nominal diameter of wires No x Ø (mm)	Max. DC resistance at 20°C Ohm/km	Approx. overall diameter (uncovered conductor) mm	Nominal thickness of PVC covering mm
16	7x1.68	1.15	5.1	1.0
35	7x2.48	0.524	7.4	1.2
50	19x1.80	0.387	9.0	1.4
70	19x2.10	0.268	10.5	1.4
95	19x2.48	0.193	12.4	1.6

4.4 Packing and Marking

4.4.1 The finished conductor shall be wound on wooden drum such as to prevent damage during transportation and handling. The drums shall be made from treated timber resistant to termite attack.

4.4.2 The actual length of conductor shall not be less than the length indicated on the drum.

4.4.3 The following information shall be marked legibly and in a permanent manner on the flange of the drum:

a) The manufacturer's name.
b) The type of conductor.
c) The conductor cross-sectional areas in mm².
d) The length of the conductor, in metres.
e) The year of manufacture.
f) The gross mass and net mass, in kilogram.
g) The instructions for handling and use (in English Language).
h) The words "**PROPERTY OF RURAL ELECTRIFICATION AUTHOIRTY**"

4.4.4 PVC covered conductors shall be marked with the manufacturer's name, type of conductor, cross-sectional area, year of manufacture and the words "**PROPERTY OF RURAL ELECTRIFICATION AUTHORITY**"

5. TESTS AND INSPECTION

5.1 The soft drawn copper conductors shall be tested and inspected in accordance with the requirements of this specification, IEC 60502-1 and IEC 60228. It shall be the responsibility of the manufacturer to perform or to have performed the tests specified.

5.2 Certified true copies of previous Test Reports (in English Language) from the relevant International or National Testing/Standards Authority of the country of manufacture (or ISO/IEC 17025 accredited laboratory) shall be submitted with the tender for the purpose of technical evaluation. A copy of accreditation certificate for the laboratory shall also be submitted (all in English Language).

5.3 Routine and sample test reports for the cables to be supplied shall be submitted to KPLC/REA for approval before shipment/delivery of the goods.

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ANNEX A: **<u>Statement of Compliance and Technical Particulars</u>** *(to be filled and signed by the <u>Manufacturer</u> for <u>all clauses</u> and submitted together with catalogues, brochures, drawings, technical data and test reports for tender evaluation)*

Clause Number	Bidder's offer	**Reference page on Manufacturer's catalogue, drawing, technical data or test report to support the offer.**

NB: - *This schedule does not in any way substitute for detailed information required elsewhere in the specification*.

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