



The Kenya Power & Lighting
Co. Ltd

TITLE:
**SPECIFICATION FOR TREATED
WOOD POLES: Part 2: Softwood
Poles**

Doc. No.	KPLC1/3CB/TSP03/001/2
Issue No.	1
Revision No.	0
Date of Issue	2006-08-21
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Issued by: S. Kimitai, Assistant Engineer – R&D

Authorized by:

R.J. Muiru

Signed: *S. Kimitai*

Signed:

[Signature]

Date: 2006-08-21

Date:

31.8.06



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0.1 Circulation List

COPY NO.	COPY HOLDER
1	Supplies Manager
2	Stores & Stock Control Manager
3	Chief Engineer, Research & Development
4	Chief Engineer, Technical Audit
5	Senior Engineer, Technical Standards & Specifications

0.2 Amendment Record

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

Issued by: S. Kimitei, Assistant Engineer – R&D

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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 solid softwood poles (treated). It has been approved by the Technical Committee for use by KPLC in purchasing treated softwood poles.

It shall be the responsibility of the supplier to ensure adequacy of the design and good practice in the manufacture of the treated wood poles for KPLC. The supplier shall submit information which confirms satisfactory service experience in tropical conditions of products which fall within the scope of this specification.

1. SCOPE

This specification is for solid softwood poles (treated) intended for use as upright supports for power transmission and distribution overhead lines.

2. REFERENCES

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

BS 1990-1: British standard for wood poles for overhead power and telecommunication lines. Part 1: specification for softwood poles.

SANS 753: Pine poles, cross-arms and spacers for power distribution, telephone systems and street lighting.

AS 2209: Australian standard for wood poles for overhead power and telecommunication lines.

ANSI 05.1: Wood poles for overhead power and telecommunication lines.

3. TERMS AND DEFINITIONS

Terms and definitions given in the reference standards shall apply.

4. REQUIREMENTS

4.1 Strength and species

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4.1.1 Wood poles shall belong to the strength class (group) *Medium*.

4.1.2 Wood poles shall be made from redwood or scots pine (*pinus slyvestris*) as per BS 1990. Other species of equivalent strengths (ultimate loads) and supported by evidence of satisfactory service experience in tropical conditions shall be accepted.

4.2 Felling

4.2.1 The trees shall be cut as close to the ground level as possible and no timber shall be removed, trimmed or cut from the butt end so as to reduce its natural size. The ends shall be sawn to give a flat section. The butt end shall be cut square to within 5° while the top end shall be cut to a slant angle of $60^\circ (-0^\circ, +5^\circ)$ to the longitudinal axis.

4.2.2 Poles shall be shaved free of the bark, and branches shall be cut off neatly in the direction of growth and be dressed down flush with the trunk. The poles shall be banded in accordance with clause 4.5.

4.2.3 The poles shall then be stacked in open formation clear of the ground and kept in such a manner as to attain the moisture content required in clause 4.3 before treatment.

4.3 Moisture content

The average moisture content of each batch of poles before preservation shall not exceed 28%. No individual pole in the batch shall have a moisture content greater than 30% as per BS 1990.

4.4 Defects

The poles shall be of sound wood, straight, free from decay, insect attack, rot pockets and any damages caused by handling and processing that could affect the strength of the pole. The growth and seasoning defects shall be limited to the requirements set out in BS 1990.

4.5 Banding

4.5.1 Both ends of the poles shall be banded.

4.5.2 The band shall be fixed not less than 75 mm and not more than 100 mm from the butt end of the pole and from the lower edge of the cut at the apex respectively.

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4.5.3 The pole shall be banded by use of galvanized steel tape not less than 0.9 mm (SWG 20) thick and not less than 19 mm wide, fastened tightly around the pole and secured by a suitable clip and galvanized wire nails.

4.6 Preparation of poles for treatment

4.6.1 Preservative treatment shall not take place until all dressing, notching, pre-cutting and boring (drilling) has been completed. The moisture content as per clause 4.3 shall be maintained.

4.6.2 Holes drilled in the pole to support fittings shall have a diameter of 18.0mm for pole size 10.0m, and 24.0mm for all other sizes, with a tolerance of ± 1 mm. Holes shall be on a straight line parallel to the axis drilled at 90° . The set of MV and the LV holes shall be 90° spaced on the surface of the pole. The table below shows the required drilling positions, measured from the top of the pole for each pole category.

STANDARD POLE LENGTH (M)	POSITION OF EACH HOLE FROM THE TOP OF THE POLE (mm)					
	MV		LV			
Hole No. \Rightarrow	1	2	3	4	5	6
10	-	-	150	455	760	1065
11	150	530	1400	1705	2010	2315
12	150	759	1674	1979	2284	2589

4.7 Sizes

4.7.1 The standard sizes of the different categories of poles shall be as indicated herein. These shall be taken as minimum dimensions; the pole strength shall conform to the requirements of BS 1990.

STANDARD POLE LENGTH (Medium Poles) M	ULTIMATE LOAD AT 0.6m FROM TOP OF POLE kN	MINIMUM DIAMETER AT 1.5m FROM BUTT END mm	DIAMETER AT TOP mm	
			Minimum	Maximum
10.0	8.13	230	150	185
11.0	8.18	240	150	190
12.0	8.23	250	150	190

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4.7.2 The tolerance on length shall be $\pm 1\%$ of the specified length.

4.8 Preservation

4.8.1 Preservation shall be in accordance with the requirements of BS 1990.

4.8.2 The poles shall be pressure impregnated with creosote and the average net retention of preservative in a charge shall be not less than 115kg/cubic meter.

4.8.3 Care shall be taken to ensure that the poles are safe to handle before delivery.

5. TESTS AND INSPECTION

5.1 Tests and inspection shall be done in accordance with BS 1990 and the requirements of this specification. It shall be the responsibility of the supplier to perform or to have performed all the tests specified.

5.2 Certified true copies of test reports and certificates by the relevant 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).

Copies of test reports and certificates indicating the specifications and the grade of the preservative used, preservative penetration and retention, dimension and strength tests shall be presented with the tender. In addition the manufacturer shall provide the method used to calculate the level of retention in the sapwood.

5.3 Complete test reports for the poles to be supplied shall be submitted to KPLC for approval before shipment.

6. MARKING

6.1 Each pole shall have a gouge or brand mark at least 50mm long, 5mm wide and 3mm deep placed 3m from the butt. Information specified in 6.2 and 6.3 shall be in characters not less than 25mm high and gouged or branded 5mm wide and 3mm depth. Spacings between codes shall be between 20mm and 30mm.

6.2 Each pole shall be marked with the following information above the gouge mark:

- a) Length of pole (in m);
- b) Class of pole i.e. M (medium).

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- 6.3 Each pole shall be marked with the following information below the gouge mark:
- Species code, e.g. SP (Scots pine or Redwood);
 - Country of origin (as per BS 1990);
 - Date of treatment, comprising two digits of the month followed by the last two digits of the year separated by a slash;
 - Name of treatment plant;
 - Type of preservative used;
 - The standard to which the pole is manufactured.
- 6.4 Each pole (Medium Class) shall be fitted with a permanent colour coded tag at both ends to facilitate size identification during handling and storage. The tag shall be corrosion resistant and shall be of steel at least 50mm x 50mm x 1mm painted in accordance with the table herein. It shall be secured by use of galvanized wire nails.

STANDARD POLE LENGTH (Medium Poles) (m)	COLOUR OF PAINT (of tag)
10.0	GREEN
11.0	NAVY BLUE
12.0	YELLOW

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ANNEX A1: Statement of Compliance and Technical Particulars (to be filled and signed by the Manufacturer for all clauses and submitted for tender evaluation)

Clause Number	Bidder's offer	Reference page on catalogue, drawing, technical data or tests certificate to support the offer.

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

Manufacturer's Declaration: Ion behalf of
declare that the above specifications matrix conforms to a typical tender item type
..... as clearly marked in the attached technical brochures & drawings, and
being offered for this tender.

Signature DateStamp

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