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0.1 Circulation List

COPY NO.	COPY HOLDER
1	Manager, Standards
Electronic copy (pdf) on Kenya Power server (http://172.16.1.40/dms/browse.php?fFolderId=23)	

0.2 Amendment Record

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
0	2015-04-09	Cancels and replaces issue No. 1 dated 2009-05-18	Michael Apudo	Dr. Eng. Peter Kimemia
1	2015-10-21	Harmonized Tables 3, 4, 5, 6a & b to capture all cables applicable in KPLC systems	Michael Apudo	Dr. Eng. Peter Kimemia

FOREWARD

This specification has been prepared by the Standards Department of The Kenya Power and Lighting Company Limited (KPLC) and it lays down requirements for PVC Insulated Wiring and Auxiliary Cables. It is intended for use by KPLC in purchasing the cables.

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 specification covers requirements for PVC Insulated Wiring and Auxiliary Cables for rated voltage Uo/U of 600/1000V for armoured cables and 450/750V for PVC sheathed/unsheathed and insulated flexible cords. It covers the following:

a) PVC-insulated, non-sheathed cable for internal wiring, single core, copper
b) PVC-insulated, PVC-sheathed cable with or without circuit protective conductor, flat twin, copper
c) PVC-insulated flexible cables and cords, copper
d) Multi-core auxiliary armoured cables with copper conductors

NOTE*: KPLC Stores Codes and Descriptions for the various sizes are in Appendix B attached.*

1.2. The specification stipulates the minimum requirements for PVC Insulated Wiring and Auxiliary Cables in the company and it shall be the responsibility of the supplier to ensure adequacy of the design, good engineering practice, adherence to the specification and applicable standards and regulations as well as ensuring good workmanship in the manufacture of the cables for The Kenya Power & Lighting Company.

The specification does not purport to include all the necessary provisions of a contract.

2. REFERENCES

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

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

IEC 60227-6:	Polyvinyl chloride insulated cables of rated voltages up to and Including 450/750 V –Part 6: Lift cables and cables for flexible connections
IEC 60228:	Conductors of insulated cables.
BS 6346:	Electric cables. PVC insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V
BS 6004:	British Standard Specification for PVC-insulated, non-armoured cables for voltages up to and including 450/750V, for electric power, lighting and internal wiring.
BS EN 50363:	Insulating, sheathing and covering materials for low voltage energy cables — Part 3: PVC insulating compounds- Part 4-1: PVC sheathing compounds
BS 7655-4.2:	Specification for insulating and sheathing materials for cables. PVC sheathing compounds. General application.
KS 04-194:	Kenya Standard Specification for PVC insulated cables for electricity supply.
KS 04-192:	Kenya Standard Specification for PVC insulated flexible cables and cords of rated voltage Uo/U up to and including 450/750V.
KS 04-453:	Kenya Standard Specification for PVC insulated cables (non-armoured) for electric power & lighting.

3. DEFINITIONS

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

4. REQUIREMENTS

4.1. Service Conditions

The cables shall be suitable for continuous operation in tropical areas:

a) At altitudes of up to 2200m above sea level,
b) Humidity of up to 90%,
c) Average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C.

4.2. Design and Construction

4.2.1. Conductors

4.2.1.1. The conductors for the cables in this specification shall consist of plain annealed copper conductors with the conductor classes in accordance with IEC 60228 as follows:

a) PVC-insulated flexible copper cables and cords, (see Table 5) shall be class 5;
b) PVC-insulated, non-sheathed copper cable for internal wiring, single core, (see Table 3) shall be class 2;
c) PVC-insulated, PVC-sheathed copper cable with or without circuit protective conductor, flat twin (see Table 4) shall be class 2;
d) Multi-core auxiliary armoured cables with copper conductors (see Table 6a & b).

4.2.1.2. The wires if not specified in each conductor shall be the same in nominal diameter and shall not exceed the appropriate values given in Tables 2 & 3 of IEC 60228.

4.2.2. Cable design

4.2.2.1. The cables shall be designed as follows:

a) PVC-insulated single core and flat twin cables shall be designed and constructed to IEC 60502-1, KS 04-453 and BS 6004;
b) Flexible cables and cords shall be designed and constructed to IEC 60502-1, IEC 60227-6 and KS 04-192.
c) Multi-core cables (armoured) shall be designed and constructed to IEC 60502-1, BS 6346 and KS 04-194.

4.2.2.2. The cables shall be suitable for wiring, metering, control and other auxiliary applications (including underground) and where the combination of ambient temperature and temperature rise due to load results in a conductor temperature not exceeding 70°C.

4.2.3. Insulation material

4.2.3.1. The insulation material for PVC-insulated single core and flat twin cables in Table 3 & 4 and flexible cables in Table 5 shall be type TI 2, PVC compound as per Table 1.

4.2.3.2. Armoured cables in Table 6a & 6b shall be type TI 1, PVC compound complying with Table 1.

4.2.4. **Armour material**

The armour wire for the cables shall consist of a single layer of galvanized steel. The wire diameters shall be as per Tables 6a & 6b

4.2.5. **Over-sheath material**

4.2.5.1. The oversheath material for PVC-insulated single core and flat twin cables in Table 4 shall be PVC compound Type 6 as specified in BS 6004, BS 7655-4.2 and Table 1.

4.2.5.2. The oversheath for the flexible cables shall be a polyvinyl chloride compound of type PVC/ST5 applied around the cores as per IEC 60502-1 and IEC 60227-6. The sheath shall be applied so as to substantially avoid the formation of cavities, and shall not adhere to the cores. The edges of the cable shall be rounded off.

4.2.5.3. The oversheath armoured cables shall be an extruded layer of black PVC compound – type TM 1 as specified in Table 1 of this specification and shall conform to BS EN 50363-4.1.

4.2.5.4. The oversheath shall be spark tested in accordance with BS EN 50363-3. It shall be applied by an extrusion process and shall form a compact homogeneous body.

4.2.5.5. The PVC compound for PVC-insulated single core and flat twin cables (see Table 3 & 4) and armoured cables (see Table 6a & b) shall be treated with anti-UV chemicals prior to shaping by injection moulding to prevent UV attack by sunlight.

Table 1: Test requirements for insulation and overs-heath PVC compounds as per BS EN 50363: Part 3 and Part 4-1

Test	Test details		Insulation		Sheathing	
			TI 1	TI 2	Type 6	TM 1
Tensile properties	Min. tensile strength, N/mm^2		12.5	10.0	6	10.0
	Min. elongation, %		125	125	125	125
Low temperature bend test	Temperature at which specimen shall not crack, ^{0}C		-15±2	-15±2	-15±2	-15±2
Low temperature elongation test	Test temperature, ^{0}C		-15±2	-15±2	-15±2	-15±2
	Min. elongation, %		20	20	20	20
Low temperature impact test	Temperature at which specimen shall not crack, ^{0}C		-15±2	-15±2	-	-15±2
Accelerated ageing for 7 days at 80±20C followed by tensile	Tensile strength after ageing	Min. value, N/mm^2	10	10	-	10
		Max. variation, %	20	20	-	20

Test	Test details		Insulation		Sheathing	
			TI 1	TI 2	Type 6	TM 1
strength and elongation at break test and loss of mass test	Elongation at break after ageing	Min. value, %	150	150	-	150
		Max. variation, %	20	20	-	20
	Max. loss of mass after ageing, mg/cm^2		2.0	2.0	-	2.0
Pressure test at high temperatures	Test temperature, ^{0}C		80±2	70±2	80±2	70±2
	Max. indentation, %		50	50	50	50
Resistance to cracking	Temperature at which specimen shall not crack, ^{0}C		150±2	150±2	150±2	150±2
Insulation resistance test	Min. K value at 70^{0}C, MΩ.Km		0.037	0.037	-	-
	Min. K value at 20^{0}C, MΩ.Km		-	-	0.0035	-

4.2.6. Bedding material

The bedding material for all the cables shall be PVC compound compatible with the respective insulating material and shall be suitable for the operating temperature of the cable.

4.2.7. Core identification

The cores of all cables shall be identified by colours or numbers in accordance with BS 6346:1997 and the following sequence in Table 2:

Table 2: Core identification

Type	Colours/Numbers
Single-core	*Red, Black, Blue, Green or Grey*
Twin-core	*Red, Black*
Three-core	*Red, Yellow, Blue*
Four-core	*Red, Yellow, Blue, Black*
Five-core and above (auxiliary cables)	*Numbers 1, 2, 3, 4, 5.....upwards*

NOTE:

1. *The colours Red, Yellow and Blue are intended to indicate phase conductors and Black the neutral conductor.*
2. *The numbers shall be black printed on white cores. The interval between adjacent numbers on the same core shall not exceed 75mm.*

4.2.8. Tolerances

Laying up, bedding, oversheath, armour thicknesses and all tolerances shall be in accordance with design standards given in 4.2.2.1.

4.3. Characteristics

The cables shall be of the following characteristics:

Table 3: PVC insulated, non-sheathed, single-core cable with stranded copper conductors as per IEC 60502-1, KS 04-453 and BS 6004:2012

Nominal conductor area (mm^2)	Number and size of wires (No/mm)	Thickness of insulation (mm)	Nominal overall diameter (mm)	Max d.c. resistance at 20°C Ω/km
1.0	1/1.13	0.6	2.5	18.1
1.5	1/1.38	0.8	2.9	12.1
2.5	7/0.67	0.8	3.8	7.41
4.0	7/0.85	1.0	4.3	4.61
6.0	7/1.04	1.0	4.9	3.08
10	7/1.35	1.0	6.8	1.83
35	19/1.53	1.2	10.3	0.524

Table 4: Twin PVC-insulated, PVC-sheathed cables with copper conductors (with or without circuit protective conductor - CPC) per IEC 60502-1, KS 04-453 and BS 6004:2012

Number & Nominal conductor area (mm^2)	Number and size of wires (No/mm)		Thickness of insulation (mm)	Thickness of sheath (mm)	Nominal overall dimensions (mm)		CPC min. nominal x-sectional area, mm^2	Max resistance at 20°C (Ω/km)	Min insulation resistance at 70°C (Ω/km)
	Phase	Earth - CPC			Lower limit	Upper limit			
2 x 1.5	1/1.38	-	0.7	0.9	4.5x7.2	5.6x8.7	-	12.1	0.011
2 x 1.5	1/1.38	1/1.0	0.7	0.9	4.3x8.3	5.4x10.0	1.0	12.1	0.011
2 x 2.5	7/0.67	-	0.8	1.0	5.2x8.5	6.6x10.5	-	7.41	0.010
2 x 2.5	7/0.67	7/0.46	0.8	1.0	5.2x9.8	6.6x12.5	1.5	7.41	0.010
2 x 4.0	7/0.85	7/0.46	0.8	1.0	5.7x10.8	6.9x13.1	1.5	4.61	0.0077
2 x 6.0	7/1.04	7/0.67	0.8	1.1	6.4x12.4	7.8x15.0	2.5	3.08	0.0065

Table 5: 450/750V, PVC insulated PVC sheathed circular flexible cord cables with copper conductors as per IEC 60502-1, IEC 60227-6 and KS 04-192.

Number of cores & nominal cross sectional area of conductor mm²	Preferred number and size of wires (No)	Thickness of insulation mm	Thickness of outer sheath, mm	Overall diameter (range), mm	Max resistance at 20°C (Ω/km)	Minimum insulation resistance at 70°C MΩ.km
3 x 0.75	6; 9; 12; 18; 24 or 30	0.6	0.8	6.0 – 7.6	26.0	0.011
3 x 1.0		0.6	0.8	6.3 – 8.0	19.5	0.010
3 x 1.5		0.7	0.9	7.4 – 9.4	19.5	0.010
3 x 2.5		0.8	1.1	9.6 – 12.0	7.98	0.0095
3 x 4.0	4 or 5	0.8	1.2	10.5 – 13. 1	-	0.0078

Table 6a: Two-, Three-, Four-core 600/1000V Auxiliary Cables with copper conductors (with steel-wire armour) as per IEC 60502-1, BS 6346 and KS 04-194

No. of cores	Conductor Area mm²	Strand No./Size mm	Insulation thickness mm	Extruded bedding mm	Armour wire diameter mm	Over sheath mm	Overall diameter mm	Max Copper resistance at 20°C (ohm/km	Max. Steel wire armour resistance at 20°C (ohm/km)	Min Insulation Resistance at 20°C Mega ohm.km	Weight kg/km
2	1.5	7/0.53	0.6	0.8	0.9	1.4	12.3	12.1	10.2	10	310
	2.5	7/0.67	0.7	0.8	0.9	1.4	13.6	7.41	8.8	9	368
	4	7/0.85	0.8	0.8	0.9	1.4	15.1	4.61	7.5	8	450
	6	7/1.04	0.8	0.8	0.9	1.5	16.5	3.08	6.8	7	541
3	1.5	7/0.53	0.6	0.8	0.9	1.4	12.8	12.1	9.5	10	321
	2.5	7/0.67	0.7	0.8	0.9	1.4	14.1	7.41	8.2	9	421
	4	7/0.85	0.8	0.8	0.9	1.4	15.8	4.61	7.0	8	533
	6	7/1.04	0.8	0.8	1.25	1.5	18.0	3.08	4.6	7	745
4	1.5	7/0.53	0.6	0.8	0.9	1.4	13.5	12.1	8.8	10	357
	2.5	7/0.67	0.7	0.8	0.9	1.4	15.0	7.41	7.7	9	447
	4	7/0.85	0.8	0.8	1.25	1.5	17.8	4.61	4.6	8	716
	6	7/1.04	0.8	0.8	1.25	1.5	19.2	3.08	4.1	7	855

Table 6b: Multi-core 600/1000V Auxiliary Cables with copper conductors (with steel-wire armour) as per IEC 60502-1, BS 6346 and KS 04-194

No. of cores	Conductor Area mm²	Strand No./ size mm	Insulation thickness mm	Extruded bedding mm	Armour wire diameter mm	Over sheath mm	Approx. overall diameter mm	Max Copper resistance at 20°C (ohm/km	Max. Steel wire armour resistance at 20°C (ohm/km)	Min Insulation Resistance at 20°C Mega ohm.km	Weight kg/km
5	1.5	7/0.53	0.6	0.8	0.9	1.4	14.3	12.1	-	10	436
7				0.8	0.9	1.4	15.2		7.5		515
12				0.8	1.25	1.5	19.4		4.0		839
19				0.8	1.25	1.6	22.2		3.5		1095
5	2.5	7/0.67	0.7	0.8	0.9	1.5	16.3	7.41	-	9	528
7				0.8	1.25	1.5	18.0		4.6		636
12				0.8	1.25	1.6	22.4		3.5		1037
19				1.0	1.6	1.7	26.6		2.3		1628
27				1.0	1.6	1.8	30.2		1.9		2107
5	4.0	7/0.85	0.8	0.8	1.25	1.5	19.0	4.61	-	8	813
7				0.8	1.25	1.6	20.5		3.9		946
12				1.0	1.6	1.7	26.8		2.2		1583
19				1.0	1.6	1.8	30.5		1.9		2123

4.4. EMBOSSING ON CABLE OVERSHEATH

The external surface of all cables conforming to this specification shall be legibly marked with the following elements:

Element Example of marking

a) Cable manufacturer - Manufacturer's name and their unique factory identifier
b) Electric cable ELECTRIC CABLE
c) Voltage designation i.e. 450/750 V or 600/1000V
d) Standard number i.e. KS 04-192 and BS 6004
e) UK cable code 6242Y
f) Number of cores, nominal area of conductor and circuit protective conductor as appropriate e.g.
   (i) 2 × 1.5
   (ii) 2 × 1.5 + 1.0
g) Year of manufacture ZZZZ
h) Standard core colour identifier H

Letters and figures shall be raised and consist of upright block characters which shall be legible. Minimum size of characters shall be 3mm. The gap between the end of one inscription and the beginning of the next shall be not greater than 25mm and the gap between each complete set of markings shall be not greater than 500mm.

An indelible marking shall be given at every one meter interval to assist field personnel in cutting required length.

NOTE:

1. *A simplified version of the manufacturer's name, or a trading name of the manufacturer, may be used in place of the full name.*
2. *Any suitable method may be used to unambiguously identify the manufacturer's factory.*
3. *The manufacturer's own trademark or equivalent may be added but this cannot be used instead of the manufacturer's name or identifier.*
4. *The year of manufacture may take the form of the actual year (e.g. 2015) or a coded year identifier assigned by the manufacturer.*

4.5. QUALITY MANAGEMENT SYSTEM

4.5.1. The bidder shall submit a quality assurance plan (QAP) that will be used to ensure that the cable 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.

4.5.2. 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.

4.5.3. The bidder shall indicate the delivery time of the cables, manufacturer's monthly & annual production capacity and experience in the production of the type and size of conductor being offered. A detailed list & contact addresses (including e-mail) of the manufacturer's previous customers for similar rating of cables sold in the last five years as well as reference letters from at least four of the customers shall be submitted with the tender for evaluation.

5. TESTS AND INSPECTION

5.1. The cable shall be inspected and tested in accordance with IEC 60502-1, IEC 60811-1-1, IEC 60227-6, BS 6346, BS EN 50363-3 & 4-1 , BS 6004, BS 6500, KS 04-191, KS 04-192, KS 04-194 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. Copies of previous Test Reports confirming full conformance to clause 4 requirements for the cable issued by a **third party testing laboratory that is accredited to ISO/IEC 17025** shall be submitted with the tender for the purpose of technical evaluation. The accreditation certificate for the third party testing laboratory shall also be submitted with the tender (all in English Language).

5.3. Test Reports for the cable to be supplied under the contract shall be submitted to The Kenya Power & Lighting Company for approval before shipment/delivery and shall include the following:

a) Power frequency test voltage shall be 2.5 U_0 + 2 kV as per IEC 60502-1.
b) Insulation resistance measurement at ambient temperature and at maximum conductor temperature in normal operation;
c) Voltage test for 4 h - a power frequency voltage equal to $4U_0$ shall then be gradually applied and maintained continuously for 4 h between each conductor and the water as per IEC 60502-1.
d) Insulation material grade test
e) Sheath material grade test
f) Insulation resistance test
g) Long term resistance to d.c. test
h) Compatibility test
i) Flame propagation on single cable
j) Length of lay test
k) Flexing test

5.4. The cable shall be subject to acceptance tests at the manufactures' works before dispatch. Acceptance tests (routine & sample tests) will be witnessed by two Engineers appointed by The Kenya Power and Lighting Company Limited (KPLC).

5.5. Routine and sample test reports for the cable to be supplied shall be submitted to KPLC for approval before shipment of the goods. Tests to be witnessed by KPLC Engineers at the factory before shipment shall be in accordance with KS 04-191, KS 04-192, KS 04-194, BS 6360, BS 6746, BS 6004, BS 6500 and the requirements of this specification and shall include:

a) Conductor material and construction
b) Insulation resistance tests
c) Conductor and armour resistance tests
d) Laid up cores and core identification
e) Dimensional checks
f) Compatibility checks
g) Fire test on single cable
h) Spark resistance tests

5.6. Upon delivery of the cable, KPLC will inspect them and may perform or have performed any of the relevant tests in order to verify compliance with the specification. The supplier shall replace/rectify without extra or additional charge to KPLC, cables which upon examination, test or use fail to meet any of the requirements in the specification.

6.0. MARKING AND PACKING

6.1 The finished cable shall be wound in one continuous length on wooden drum such as to prevent damage during transportation and handling. The drums shall be made from treated timber resistant to termite attack and shall be lagged all round to prevent damage to the cable. There shall be no gaps in the wooden lagging around the drum.

6.2 Each drum shall contain only one continuous length of cable of 2500m in length. The actual length of cable shall not be less than the length indicated on the drum.

6.3 Both ends of the cable shall have been sealed to prevent ingress of water during transportation, storage, handling and installation. The sealing shall enclose the oversheath completely and shall be by close fitting plastic caps. Both ends of the cable shall be secured to the drum to prevent mechanical damage.

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

a) The manufacturer's name
b) The type and rating of cable
c) The conductor cross-sectional area in mm^2
d) The length of cable in metres
e) The year of manufacture
f) The gross mass and net mass in Kilograms
g) The instructions for handling and use (in English language)
h) The words **"PROPERTY OF THE KENYA POWER & LIGHTING CO."**

NOTE: *The cable shall have been marked in accordance with clause 4.4.*

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 technical 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 and customer reference letters;
d) Details of manufacturing capacity and the manufacturer's experience;
e) Copies of required 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 testing laboratory.
g) Manufacturer's warranty and guarantee
h) Manufacturer's letter of authorization, copy of the manufacturer's ISO 9001:2008/ KEBS Diamond mark certificate and other technical documents required in the tender.

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

a) Guaranteed Technical Particulars,
b) Design Drawings and construction details of the cable,
c) Quality assurance plan (QAP) that will be used to ensure that the cable 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) Detailed test program to be used during factory testing,
e) Marking details and method to be used in marking the cable,
f) Manufacturer's undertaking to ensure adequacy of the design, good engineering practice, adherence to the specification and applicable standards and regulations as well as ensuring good workmanship in the manufacture of the cables for The Kenya Power & Lighting Company
g) Packaging details (including packaging materials, lagging and length on drum).

7.3. The supplier shall submit recommendations for use, care, storage and routine inspection/testing procedures, all in the English Language, during delivery of the cables to KPLC stores.

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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, sales records, four customer reference letters, the manufacturer's experience and copies of complete type test reports for tender evaluation, all in English Language)*

Tender No. .....

Clause number			KPLC requirement	Bidder's offer
Manufacturer's Name and address				specify
Country of Manufacture				specify
Bidder's Name and address				specify
Type designation of cable				specify
Operating voltage Uo/U				specify
1.	Scope			specify
1.1-1.3				
2.	Applicable Standards			specify
3.	Terms & Definitions			specify
4.	REQUIREMENTS			specify
4.1	Service Conditions			specify
4.2	Design and construction			specify
4.2.1	Conductors	PVC sheathed / unsheathe and flat twin cables	Class 2 as per IEC 60228	Prove compliance by attaching a test report and a drawing
		Flexible cables	Class 5 as per IEC 60228	
		Armoured cables	Class 2 as per IEC 60228	
4.2.2.	Cable design	PVC sheathed / unsheathe and flat twin cables	KS 04-453 or BS 6004	Prove compliance by attaching a test report and a drawing
		Flexible cables	KS 04-192 or BS 6004/BS EN 50525-2-11	
		Armoured cables	KS 04-194/BS 6346	
	Maximum operating temperature		70^0C	
4.2.3	Insulating material	PVC sheathed / unsheathed and flat twin cables	TI 2	Prove compliance by attaching a test report and a drawing
		Flexible cables	TI 2	
		Armoured cables	TI 1	
4.2.4	Oversheath material	PVC sheathed / unsheathe and flat	Type 6	

Clause number		KPLC requirement		Bidder's offer
		twin cables		
		Flexible cables	Type PVC/ST5	
		Armoured cables	TM 1	
4.2.5	Armour material		Galvanized steel	
4.2.6	Bedding material		Compatible with insulating material	
	Compliance to Table 1			
4.3	Standard sizes and characteristics	As per Tables 3, 4, 5, 6, 7 & 8 and the relevant standards		Prove compliance by attaching a test report and a drawing
4.4	Embossing on cable Oversheath (parameters to be indicated and method of marking)			specify
4.5	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
5.1	Test standards and responsibility of carrying out tests			Provide
5.2	Copies of Type Test Reports submitted with tender			Provide
5.3	Acceptance tests to be witnessed by KPLC at factory before shipment			Provide
5.4	Test reports to be submitted by supplier to KPLC for approval before shipment			Provide
5.5	Replacement of rejected cables			Provide
6.1	Markings			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	Statement of compliance to specification			Provide

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Manufacturer's Name, Signature, Stamp and Date

APPENDIX B: KPLC STORES CODES

CODE	DESCRIPTION	Table No. in Specification
108618	CABLE, BLACK/RED, PVC, 7/1.04, 6.0MM², S/C, COPPER	Table 3
108620	CABLE, RED/BLACK, PVC, 19/1.53, 35MM², S/C, COPPER	Table 3
108628	CABLE, PVC, PVC, TWIN WITH EARTH, 1.5MM², COPPER	Table 4
108629	CABLE, PVC, PVC, TWIN, 2.5MM², COPPER	Table 4
108642	CABLE, BLACK, PVC, 7/0.67, 2.5MM², S/C, COPPER	Table 3
108643	CABLE, BLUE, PVC, 7/0.67, 2.5MM², S/C, COPPER	Table 3
108644	CABLE, GREEN, PVC, 7/0.67, 2.5MM², S/C, COPPER	Table 3
108645	CABLE, GREY, PVC, 7/0.67, 2.5MM², S/C, COPPER	Table 3
108646	CABLE, RED, PVC, 7/0.67, 2.5MM², S/C, COPPER	Table 3
108649	CABLE, FLEXIBLE, PVC, PVC, 3/CORE, 1.0MM², COPPER	Table 5
108829	CABLE, PVC, 7/CORE, 7/0.67, 2.5MM², SWA, COPPER	Table 7
108830	CABLE, PVC, 12/CORE, 7/0.67, 2.5MM², SWA, COPPER	Table 7
108840	CABLE, PVC, 2/CORE, 7/0.67, 2.5MM², SWA, COPPER	Table 6
108848	CABLE, PVC, 4/CORE, 7/0.67, 2.5MM², SWA, COPPER	Table 6
108698	CABLE, PVC, 19/CORE, 7/0.67, 2.5MM², SWA, COPPER	Table 7
108907	CABLE, PVC, PVC, S/C, 1.5MM² SOLID, COPPER	Table 3
108920	CABLE, FLEXIBLE, PVC, PVC, 4/CORE, 2.5MM², COPPER	Table 5
108940	CABLE, GREEN, PVC, 7/1.04, 6.0MM², S/C, COPPER	Table 3
108917	CABLE, 10MM² S/C COPPER PVC (Black) LV	Table 3