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FOREWORD

This specification has been prepared by the Standards Department in collaboration with Human Resource Services Department; Safety, Health & Environment (SHE) Department of the Kenya Power and Lighting Company Limited (KPLC/Kenya Power) and The Kenya Electrical Trade & Allied Workers Union (KETAWU0. The specification lays down requirements for – Windbreaker Jacket and Rain Coat. It is intended for use by Kenya Power in purchasing these items.

The supplier shall submit information which confirms satisfactory service experience with products which fall within the scope of this specification

1. SCOPE

1.1. This document specifies the design and performance, methods of test, marking and user information for Rain Coat for use by Kenya Power company employees. It also outlines the general requirements for garments to be worn by employees for enhancing their protection and comfort while working in cold, wind and rainy environments.

1.2. The specification covers performance requirements for the raincoat made from flexible materials, which are designed to protect the wearer's body, during cold, wind and rainy seasons.

1.3. The specification stipulates the minimum requirements for the rain coat 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 items for The Kenya Power & Lighting Company.

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

2.0. REFERENCES

The following standards contain provisions which, through reference in this text constitute provisions of this specification. Unless otherwise stated, the latest editions (including amendments) apply.

ISO 20471: High visibility clothing -- Test methods and requirements

ISO 105: Textiles -- Tests for colour fastness -- Part B02: Colour fastness to artificial light: Xenon arc fading lamp test; -- Part E04: Colour fastness to perspiration

EN 340: Protective clothing: General requirements

BS EN 1413: Textiles. Determination of pH of aqueous extract

BS EN 14362-1: Textiles. Methods for determination of certain aromatic amines derived from azo colorants. Detection of the use of certain azo colorants accessible with and without extracting the fibres

BS EN 13402-2: Size designation of clothes. Primary and secondary dimensions

BS 3424-1: Testing coated fabrics. Method 1. Method for determination of roll characteristics

ASTM D7017 – 14: Standard Performance Specification for Rainwear and All-Purpose, Water-Repellent Coat Fabrics

KS 836-2: Classification and terminology of stitches and seams — Part 2: Seam types.

KS 836-1: Classification and terminology of stitches and seams Part 1: Types – Ready-made garments.

KS ISO 13935-1: Textiles -- Seam tensile properties of fabrics and made-up textile articles -- Part 1: Determination of maximum force to seam rupture using the strip method

3.0. TERMS AND DEFINITIONS

3.1. The definitions given in the reference standard shall apply.

3.2. Kenya Power Logo – As per sample available with Human Resource & Administration Division, Kenya Power.

4.0. REQUIREMENTS

4.1. OPERATING CONDITIONS

The raincoats shall be suitable for use in by KPLC staff outdoors in tropical climate with:

a) Altitudes of up to 2200m above sea level,
b) Humidity of up to 95%,
c) Average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C,

d) Heavy saline conditions along the coast and tropical sunshine conditions.
e) Annual mean isokeraunic level of up to 180 thunderstorm days.

4.2. Design and Construction

4.2.1. Material Design

4.2.1.1. The rain coat shall be a hooded type coat with a full zip and waterproof taped seams made from 36% Polyurethane/64% Polyester. The fabric shall also be windproof/ waterproof and allow for moisture vapour transmission (breathability).

4.2.1.2. The rain-coat shall have a high visibility silver reflective tape of not less than 50mm wide sewn to the shell for night-time safety. The reflective properties of the reflective tape and configuration shall meet or exceed the ISO 20471 Class 3 minimum requirements.

4.2.1.3. All seams and retro-reflective tape shall be sealed with hot air applied on the tape to ensure waterproof integrity. The minimum fabric requirements shall meet the performance level for the fabric as listed in Table 1.

4.2.1.4. The colour shall be measured in accordance with the procedures defined in ASTM E1164-94 with polychromatic illumination D65 and 45/0 (0/45) geometry and 2^0 (degrees) standard observer. The specimen shall have a black underlay with a reflective of less than 0.04.

4.2.1.5. The placement configuration shall consist of two horizontal bands of reflective tape on the body and on the sleeves conforming to class 3 of BS EN 1150 or ISO 20471 approved and certified by an accredited laboratory to ISO/IEC 17025 (Certificate to be attached during tender).

4.2.2. Fabric Performance

The fabric performance characteristics shall be as per Table 1.

Table 1: Performance of rain coat fabric as per ASTM D7017 – 14

Property		Units	Typical value	Test Method
Weight		g/m^2	180	BS 3424-1
Tensile strength	Warp	N/50mm	1050	BS EN ISO 1421
	Weft		850	
Tear strength	Warp	N	45	BS3424-5
Tongue	Weft		45	
Hydrostatic head	After wash	KPA AS REC	>30	BS 3424-26
	After flex		>30	
Breathability		%	80	BS7209
Water vapor	RCT7M2	PA/W		DIN EN 31092
Colorfastness of material after Xenon test, min		Gray scale	4.8	ISO 105-B02; method- 1
Colorfastness to crocking	Wet	Gray scale	4.5	AATCC 8-1996.
	Dry		5.0	
Colorfastness to perspiration, min		Gray scale	5.0	AATCC 15-1997
Colorfastness to laundry	Machine laundering domestic, min	Gray scale	5.0	AATCC 61 (2a)
	Machine laundering domestic w/bleach, min	Gray scale	4.5	
Colorfastness to hot pressing	Dry pressing @ 110^0C	Gray scale	5.0	AATCC 133
	Dry pressing @ 150^0C	Gray scale	5.0	
	Dry pressing @ 200^0C	Gray scale	4.5	
Dimensional change of background material	Commercial laundering @ 145 deg. F tumble dry	Length	% 1.1	AATCC 96 (IIIE) (a);
		Width	% 0.7	

4.2.3. Design and construction

4.2.3.1. Front

4.2.3.1.1. The raincoat shall have a front $8mm^2$ Delrin (teeth made of polyacetal resin) two (2)-way zipper which shall extend to the edge of the collar. The front zipper shall measure approximately 750mm long (large/regular).

4.2.3.1.2. The coat shall have an outside wind-fly of self-goods which measures approximately 750mm long by 75mm wide (large/regular).

4.2.3.1.3. The fly shall close with seven (7) snaps with the female snap side located on the underside of the outer flap. The five (5) bottom fly snaps shall be placed approximately 145mm center to center apart from each other with the bottom snap starting approximately 40mm from the bottom of the wind-fly.

4.2.3.1.4. The upper two (2) snaps shall be spaced approximately 70mm center to center for proper closure of the stand-up collar. The raincoat shall have a rain shed shoulder yoke measuring approximately 180mm down the front and 150mm down the back (from the high point shoulder).

4.2.3.2. **Pockets**

4.2.3.2.1. The hooded rain coat shall feature snow proof covered pockets that shall be lined front and back with 220 gram micro-fleece fabric.

4.2.3.2.2. The pocket flaps shall measure 60mm at their peak closest to the zipper and shall gradually increase in width until the side seam at which point the flaps shall measure approximately 100mm.

4.2.3.2.3. The pocket flap shall measure approximately 215mmin width. There shall be a bar-tack midway down the pocket flap on the zipper side to secure the flap.

4.2.3.3. **Back**

4.2.3.3.1. The back shall be extended approximately 90mm from the front for additional protection and shall be well rounded and symmetrical on both sides. This extension shall incorporate a fully enclosed elastic shock cord with no loose ends that can be cinched using a tension-loaded barrel lock on either side.

4.2.3.3.2. The back length shall measure approximately 825mm (size large-regular). The inside of the extension flap shall have a 16mm^2 nylon coil 550mm zipper access to the shell fabric for customization after production.

4.2.3.4. **Sleeves**

4.2.3.4.1. The sleeves shall be two (2)-piece coat style construction finished with a 25mm elasticized 50mm cuff with a snap tab closure. There shall be three (3) snaps for cuff adjustment. The snap tab closure shall be made of self-goods approximately 80mm long 25mm wide tapering to the bottom snap head.

4.2.3.4.2. Under the sleeves there shall feature a ventilating pit zipper with 16mm^2 delrin zipper that measures approximately 300mm long. The pit-zips shall be covered with a welt of shell material 300mm long x 12mm wide.

4.2.3.5. **Collar and Hood**

4.2.3.5.1. The stand-up collar shall measure approximately 100mm in height and be well shaped and symmetrical. There shall be a 26mm^2 nylon coil zipper measuring approximately 215mm long sewn approximately 60mm from the top of the collar that shall hide the drop in three (3)-piece waterproof hood.

4.2.3.5.2. There shall be a Val cover over the zipper. The side panels of the hood shall measure approximately 280mm in height x 200mm in width. The middle piece of the three (3) piece hood shall measure approximately 115mm wide and be sewn single needle raised.

4.2.3.5.3. The hood shall be shaped to have a protruding flip cap to shield the eyes from rain and to allow peripheral vision. The hood shall be finished with elastic shock cords with tension loaded barrel locks for proper adjustment.

4.2.3.5.4. There shall be 100mm triangle covers on both edges of the collar to secure the optional jacket or vest liner collars when inserted into the shell of the rain coat.

4.2.3.6. **Inside detail**

4.2.3.6.1. The coat lining shall be 100% 210T nylon taffeta. The lining shall have inside zippers sewn on top of front zipper tape on both sides to accommodate an optional zip-in jacket.

4.2.3.6.2. The inside facing zippers shall be 16mm^{2}delrin reversible measuring approximately 660mm long. There shall be a left inside welt pocket that measures approximately 220mm wide x 220mm deep.

4.2.3.6.3. The pocket shall close with a piece of hook and loop fastener 12mm x 25mm that shall be centered on the top of the pocket welt. Behind the inside pocket there shall be a 200mm nylon coil zipper on a facing of shell material for access to the outer shell for embroidery or customization to the left front without sewing through the lining.

4.2.3.6.4. The rain coat shall have a patch pocket of shell material on the right side with a vertical `180mm nylon coil zipper closure measuring approximately 165mm wide x 200mm high. The hooded rain coat shall contain a tunnelled draw cord placed approximately 500mm from the top of the front zipper.

4.2.3.7. **Side Vents**

4.2.3.7.1. The rain-coat shall have two (2) side vent zippers with approximately 250mm nylon coil zippers to allow access to equipment on either side of the coat.

4.2.3.7.2. The rain coat shall have a strap/snap tab approximately 75mm long at the bottom of the side vent zipper equipped with the female snap head at the end of the strap designed to snap to the male side of the snap which shall be placed on the front bottom sweep.

4.2.3.8. **Customization**

4.2.3.8.1. The raincoat shall have a **Pantone Blue 654PC** colour with **'Kenya Power'** letters embroidered in reflective yellow colour centered at the back (as per approved sample). The graphic design shall be as follows:

a) Back graphics placed 25mm above reflective strip shall have:
   (i) The full Kenya Power logo measuring 65mm x 65mm ±5mm at the upper centre part of the back.
   (ii) **KENYA**– 60mm high x 250mm wide with a tolerance of ±5mm.
   (iii) **POWER** – 60mm high x 250mm wide with a tolerance of ±5mm.
b) Front graphics placed on the front left chest, 12mm from front placket seam shall have:
   (i) The full Kenya Power logo measuring 65mm x 65mm ±5mm at the left chest area above the pocket.
   (ii) **KENYA POWER** – 65mm wide x 10mm high with a tolerance of ±5mm.

4.2.3.8.2. Artwork of the logo shall be attached in the tender. All raincoats must have the proper graphics applied via heat seal not a silk-screen. The colour shall be high visibility blue.

4.2.3.9. **Sizes**

The size designation shall be from X-small to 4X-large as per Table 3.

Table 3: Size designation of Rain Jackets

Sizes Designation	Finished Chest	Back Length	Sweep	Sleeve Inseam
X-Small	1200	1250	1295	560
Small (36-38)	1270	1250	1400	560
Medium (40-42)	1370	1250	1500	560
Large (44-46)	1470	1250	1600	560
X-Large (48-50)	1580	1250	1700	560
XX-Large (52-54)	1680	1250	1800	560
XXX-Large (56-58)	1780	1250	1900	560
XXXX-Large (60-62)	1880	1250	2000	560
Tolerances	± 25	± 25	± 12.5	± 12.5
All dimensions in millimetres, mm				

4.3. QUALITY MANAGEMENT SYSTEM

4.3.1. 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 of the rain coat fulfil the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfil the requirements of ISO 9001:2008.

4.3.2. The Manufacturer's Declaration of Conformity to applicable 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.

5.0. TESTS AND INSPECTION

5.1. The rain coat shall be inspected and tested in accordance with the requirements of the standards in clause 2.0 and all the provisions of this specification. It shall be the responsibility of the supplier to perform or to have performed the tests specified and whatever other tests he normally performs at works.

5.2. Copies of previous Type Tests Reports 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 to ISO/IEC 17025 for the same third party testing laboratory used shall also be submitted with the tender document (all in English Language).

5.3. The rain coat shall be subject to acceptance tests at the manufacturer's works before dispatch. Acceptance tests shall be witnessed by at least two (2) Tender Processing Committee (TPC) members appointed by The Kenya Power and Lighting Company Limited (KPLC). Routine and Sample Test Reports for the rain coat to be supplied shall be submitted to KPLC for approval before delivery of the goods.

5.4. On receipt of the product, KPLC will perform any of the tests specified in order to verify compliance with this specification. The supplier shall replace without charge to KPLC the rain coat which upon examination, test or use; fail to meet any of the requirements in the specification.

6.0. MARKING AND PACKING

6.1. MARKINGS

The following information shall be printed on a suitable label firmly attached to each packaging:

a) Purchase order number/tender
b) Manufacturer's name
c) Year of manufacture
d) Rain coat catalog number
e) The words, **"PROPERTY OF KPLC"**

6.2. PACKAGING

6.2.1. The rain coat shall be packed in a manner so as to protect it from damage during transportation and storage. Instructions for storage and handling shall be included in each package, all in English Language.

7. 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 signed by the manufacturer;
b) Copies of the Manufacturer's catalogues, brochures, drawings and technical data;
c) Sales records for the last five years and at least four 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 third party testing laboratory;
g) Manufacturers letter of authorization, ISO 9001:2008 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 signed by the manufacturer;
b) Design Drawings with details of the rain coat to be manufactured for KPLC.
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) Detailed test program to be used during factory testing;
e) Marking details and method to be used in marking the rain coat;
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 rain coat for The Kenya Power & Lighting Company;
g) Packaging details (including packaging materials).

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 rain coat to KPLC stores.

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 and copies of certificates/test reports for tender evaluation)*

Tender No. .....

Clause	Description			Guaranteed Technical Particulars offered
4.3	Name of Manufacturer & Country of manufacture			specify
	Manufacture and country of manufacture			specify
	Type/Model Reference Number			specify
	Scope: Supplier to ensure adequacy of the design, good workmanship, good engineering practice and adherence to standards, specifications and applicable regulations in the manufacture of the insulators for KPLC			specify
	Standards of manufacture			specify
	Design description			specify
	Service condition			specify
	Compliance to clause 4.2.1			specify
	Material design	Fabric material blend composition and properties		Attach test reports to prove compliance
		High visibility reflective tape properties		
		Colour chromaticity of reflective tape		
		Horizontal reflective band placement		
	Fabric material performance properties	Weight , g/m^2		specify
		Width , cm		specify
		Tensile strength	Warp , N	specify
			Weft , N	specify
		Tear strength	Warp, N	specify
		Tongue	Weft , N	specify
		Hydrostatic head	After wash , KPA	specify
			After flex , KPA	specify
		Breathability , %		specify
		Water vapor	RCT7M2, PA/W	specify
		Colorfastness of material after Xenon test, min, G		specify
		Colorfastness to crocking	Wet,	specify
			dry	specify
		Colorfastness to perspiration, min		
		Colorfastness to laundry	Machine laundering domestic, min	specify
			Machine laundering domestic w/bleach, min	specify
		Colorfastness to hot	Dry pressing @ 110^0C	specify

Clause	Description			Guaranteed Technical Particulars offered
		pressing	Dry pressing @ 150^{0}C	specify
			Dry pressing @ 200^{0}C	specify
		Commercial laundering @ 145 deg. F tumble dry	Length, %	specify
			Width, %	specify
		Commercial laundering @ 145 deg. F tumble dry	Length, %	specify
			Width, %	specify
	Design and construction	Hooded type coat with full zip and waterproof taped seams		
		Front design of the rain coat		
		Pockets design of the rain coat		specify
		Back design of the rain coat		Specify in details
		Sleeves design of the rain coat		Specify in details
		Collar and hood design of the rain coat		Specify in details
		Inside details design of the rain coat		Specify in details
		Side vents design of the rain coat		Specify in details
	Customization	Back graphic design		explain
		Front graphic design		explain
		Graphics application technology		state
		Colour of the raincoat		State
	Sizes offered	Finished chest		specify
		Back length		specify
		Sweep		specify
		Sleeve inseam		specify
4.4	Quality Management System			
	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	Test reports to be submitted by supplier to KPLC for approval			provide
5.4	Replacement of rejected rain coat.			State
6.1	Marking			specify
6.2	Packing			specify

Clause	Description	Guaranteed Technical Particulars offered
7.1	Documents submitted with tender	provide
7.2	Documents to be submitted by supplier to KPLC for approval before manufacture	provide
8.0	Manufacturer's Guarantee and Warranty	provide
9.0	List catalogues, brochures, technical data and drawings submitted to support the offer	provide
10.0	List customer sales records and reference letters submitted to support the offer.	provide
11.0	List Test Certificates submitted with tender	provide
12.0	List test reports of the wrenches to be submitted to KPLC for approval before shipment	provide
13.0	Statement of compliance to specification (indicate deviations if any & supporting documents)	provide

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Manufacturer's Name, Signature, Stamp and Date

NOTE:

*The **Guaranteed Technical Particulars (GTP), test reports & their certificates, drawings and/or catalogues** shall form the basis of technical tender evaluation. Bidders shall ensure that the offered values for the item conform to the values in the test reports and their certificates, drawings, catalogue references and/or brochures. Failure to adhere by this requirement shall lead to automatic disqualification at the technical evaluation stage.*