



Kenya Power

TITLE:

**SPECIFICATION FOR  
PERSONAL PROTECTIVE  
EQUIPMENT - PROTECTIVE  
CLOTHING**

Part 1: Overalls

Doc. No.

KP1/6C/13/TSP/01/025-1

Issue No.

2

Revision No.

0

Date of Issue

2015-08-06

Page 1 of 19

## TABLE OF CONTENTS

### 0.1 Circulation List

### 0.2 Amendment Record

## FOREWORD

1. SCOPE
2. REFERENCES
3. TERMS AND DEFINITIONS
4. REQUIREMENTS
5. TESTS AND INSPECTION
6. MARKING, LABELLING AND PACKING
7. DOCUMENTAION

**ANNEX A:** *Guaranteed Technical Particulars (to be filled and signed by the Supplier and submitted together with copies of the manufacturer's catalogues, brochures, drawings, technical data, copies of previous test reports, list of customers and reference letters from four previous customers for tender evaluation)*

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**0.1 Circulation List**

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| Issue 1 Rev 0  | 2012-12-17           | New Issue  | S. Kimitei                           | G. Owuor   |
| Issue 2 Rev. 0 | 2015-10-14           | Cancels and replaces<br>KP1/3CB/TSP/01/003 Issue<br>1 Rev 0 dated 2012-12-17<br>and all previous issues. | Michael Apudo                        | Dr. Eng. Peter<br>Kimemia<br> |
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**Date of Issue**

**2015-08-06**

**Page 3 of 19**

## **FOREWORD**

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

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 overalls for use in Industrial Work (Electrical and Mechanical) by Kenya Power company employees.
- 1.2. The specification covers performance requirements for the overalls made from flexible materials, which are designed to protect the wearer's body, except the hands, from heat, flame, and chemical substances. This shall include:
  - a) **Ordinary overall conforming to ISO 20471, ISO 11612, BS EN 1149**
  - b) **Acid proof overalls conforming to ISO 20471, BS EN 14325**
- 1.3. The specification stipulates the minimum requirements for the overalls 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 11612: Protective clothing -- Clothing to protect against heat and flame

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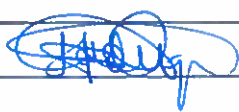

**Date: 2015-10-14**

**Date: 2015-10-14**

- 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
- BS EN 340: Protective clothing: General requirements
- BS EN 1149: Protective clothing. Electrostatic properties. --Part 3-Test methods for measurement of charge decay.
- BS EN 14325: Protective clothing against chemicals. Test methods and performance classification of chemical protective clothing materials, seams, joins and assemblages
- 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
- KNWA 2409-7: Health care wastes management commodities Part 7: Overall clothings Specification
- 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.

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Issue No.

2

Revision No.

0

Date of Issue

2015-08-06

Page 5 of 19

#### 4.0. REQUIREMENTS

##### 4.1. Operating Conditions

The Overalls shall be suitable for use in Electrical and Mechanical Work, outdoors in tropical climate with temperatures between -1 to +45 degrees Centigrade.

##### 4.2. General Requirements for Overalls

- 4.2.1. The overalls shall be designed, manufactured and tested in accordance with KNWA 2409-7, ISO 11612, BS EN 1149, BS EN 14325 and BS EN 340.
- 4.2.2. The material, design, innocuousness, comfort and ageing of the overalls in this specification shall conform to the requirements of BS EN 340 for protective clothing.
- 4.2.3. The overalls shall not adversely affect the health or hygiene of the user and shall be made of materials such as textiles that have been shown to be chemically suitable.
- 4.2.4. The materials shall not in the foreseeable conditions of normal use release or degrade to release substances generally known to be toxic, carcinogenic, mutagenic, allergenic, toxic to reproduction or otherwise harmful. Information claiming that the product is innocuous shall be checked.
- 4.2.5. Materials for the manufacture of overalls shall comply with the following requirements:
  - a) All metallic materials which could come into prolonged contact with the skin (e.g. studs, fittings) shall have an emission of nickel of less than 0.5  $\mu\text{g}/\text{cm}^2$  per week. The method of test shall be according to BS EN 1811.
  - b) The pH value for protective clothing material shall be greater than 3.5 and less than 9.5. The test method shall be materials according to BS EN 1413.
  - c) The colour fastness to perspiration of protective clothing material to ensure user hygiene (e.g. no skin staining) shall be determined in accordance with ISO 105-A02 and shall be at least grade 4 of the Grey scale for the colour change of the specimen. The test shall be conducted in accordance with ISO 105-E04.
  - d) Azo colorants which release carcinogenic amines listed in EN 14362-1 shall not be detectable by the method in that standard.
- 4.2.6. Overall design shall provide users with a level of comfort consistent with the level of protection against hazard which is provided, the ambient conditions, the level of the user's activity, and the anticipated duration of use of the protective clothing. The finished overall shall not:

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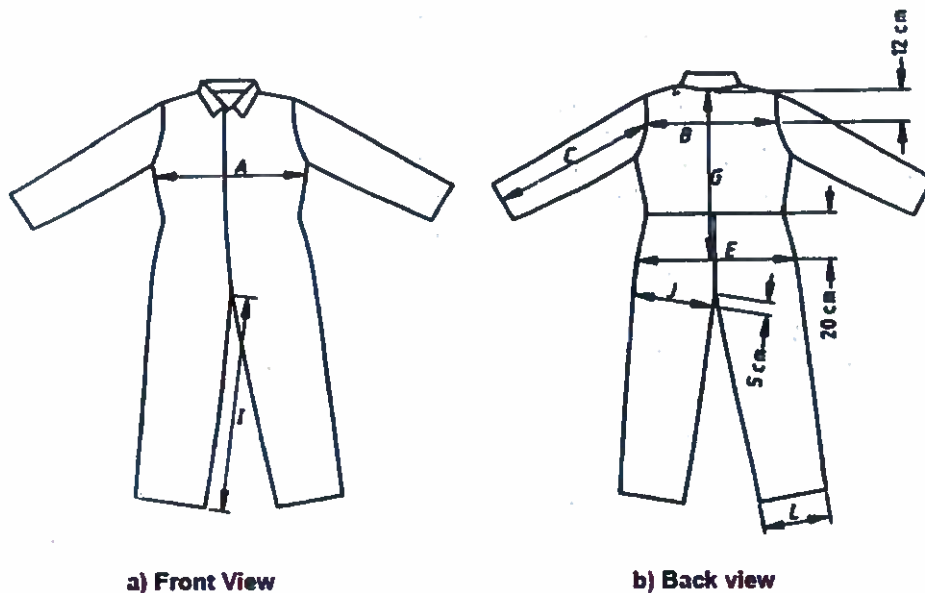
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- a) Have rough, sharp or hard surfaces that irritate or injure the user;
- b) Be so tight that blood flow is restricted;
- c) Be so loose and/or heavy so that it interferes with movements.

4.2.7. Overalls that impose significant ergonomic burdens such as heat stress, or is inherently uncomfortable because of the need to provide adequate protection, should be accompanied in the information supplied by the manufacturer by specific advice or warnings.

#### 4.2.8. Size designation

- 4.2.8.1. Overalls shall be marked with its size based on body dimensions measured in centimetres. Exceptions shall be specified in detail in the relevant product standards, e.g. Genital protectors for use in sports.
- 4.2.8.2. Measurement procedures and the designation of dimensions shall correspond to EN 13402. The size designation of each garment shall comprise the control dimensions for the chest or bust girth and height.
- 4.2.8.3. The designation and sizes shall be as per Fig. 1 and Table 1 as per KNSA 2409-7:



**Fig. 1: Size designation of overalls**

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**Date: 2015-10-14**

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KP1/6C/13/TSP/01/025-1

Issue No.

2

Revision No.

0

Date of Issue

2015-08-06

Page 7 of 19

**4.2.8.4. Manufacture**

**4.2.8.4.1. Seams**

- 4.2.8.4.1.1. All visible seams (i.e. those that are visible on the surface or inside the garment) shall be seam type 1.01.01 over-edged, sewn in one or more operations; as described in KS 836-2. There shall be no raw edges, but a single row of stitching shall be permitted where the edges have selvages.
- 4.2.8.4.1.2. For hidden seams (e.g. inside collar) seam type 1.01.01 as described in KS 836-2; shall be used.
- 4.2.8.4.1.3. The minimum seam allowance shall be 0.8 cm for all fabrics.

**4.2.8.4.2. Stitching**

- 4.2.8.4.2.1. For garments with the exception of the lightweight two-piece working rig, the stitching shall be multi-thread chain stitch, type 401, 506 or 514 as described in KS 836-1.
- 4.2.8.4.2.2. There shall be not less than 3.2 and not more than 4 stitches per centimetre.
- 4.2.8.4.2.3. For the lightweight two(2) piece-working rig, for side, sleeve head, sleeve, shoulder, yoke, inside leg and seat seams, side pockets and pocket bags, stitching shall be one of the following, combination stitch, (401, 504), as described in KS 836-1.

**4.2.8.5. Finish**

- 4.2.8.5.1. The finished overall shall be **Blue Pantone 288PC** in colour.
- 4.2.8.5.2. It shall have elasticized waistband with one button.
- 4.2.8.5.3. It shall have long sleeves with cuffs, high collar and elasticized waist. Legs shall be two pieces with bottoms of 570mm  $\pm$  10mm circumference each. The collar shall be a double thickness, unlined, fitted, turned-down collar having a 75 mm  $\pm$  10 mm finished width (non-folded).

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4.2.8.5.4. The overall shall have two 140 x 160 mm chest pockets, two standard back pockets with hidden exterior-to-interior access through pocket lining and one 190 x 230 mm tool pocket (with flap) on right leg. All pockets, except hip pockets, shall have buttons for locking. Each side of the overall next to the hip pocket shall have an opening of 180mm length for hand access to the pocket of inner ordinary clothes. A tolerance of  $\pm 10$ mm shall be allowed on these dimensions.



4.2.8.5.5. The overall shall have the following markings:

- a) Kenya Power Logo (retroreflective) shall be embroidered on the left chest area above the pocket. The logo shall be 65mm by 65mm in size.
- b) The overall shall also have 'Kenya Power' letters embroidered in retro-reflective yellow colour centered at the back (as per approved sample). The letters shall be 65mm wide x 10mm high with a tolerance of  $\pm 5$ mm.
- c) The overall dimensions of the marking at the back as follows:
  - (i) **KENYA**– 60mm high x 250mm wide with a tolerance of  $\pm 5$ mm.
  - (ii) **POWER** – 60mm high x 250mm wide with a tolerance of  $\pm 5$ mm.

### 4.3. Ordinary Overalls

#### 4.3.1. Design and construction

- 4.3.1.1. The fabric for the overall in this specification shall have permanent heat and flame retardant properties conforming to ISO 11612 (see Table 3) and anti-static resistance property conforming to BS EN 1149-3. (see Table 3)
- 4.3.1.2. The overall shall have two-way concealed front slide fastener, centrally located and open ended. It shall have a locking slider –metal snap enclosure and the slider shall be made from polyamide.
- 4.3.1.3. The overall shall have large pleats in the back for freedom of movement and comfort and a permanent stitched-in front pleat.
- 4.3.1.4. The overall shall have two bands of retro-reflective material around the torso of the garments and two bands of retro-reflective material which encircle the sleeves at the same height as those on the torso to provide 360° visibility of the wearer as shown in Fig. 2.

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Doc. No.

KP1/6C/13/TSP/01/025-1

Issue No.

2

Revision No.

0

Date of Issue

2015-08-06

Page 9 of 19

4.3.1.5. The high visibility retro-reflective material shall be fluorescent Yellow – Green and shall be of class 3 conforming to the requirements of ISO 20471.

- 4.3.1.6. The reflective material shall have the following features:-
- a) **Visibility:** Reflective material shall be visible from 300 metres.
  - b) **Reflectivity :** The reflectivity of the material shall have maximum reflective of 500 cd/lux (Test Certificate to be provided during tender)
  - c) **Certification/Approval :** The reflective tape shall be to ISO 20471 standards (Test Certificate to be provided during tender)
  - d) **Washability :** The reflective tape shall be approved tested for sustaining 50 washes (Test Certificate to be provided during tender)

**4.3.2. General fabric requirements**

4.3.2.1. Fabrics for the overalls shall be made of 100 % cotton with a blend of 5% para-aramide fibres material complying with KS 541 Part 1.

4.3.2.2. The overall fabrics shall be classified as per Table 2 for the general physical characteristics:

**Table 2: Physical Characteristics for Fabric for Overalls**

| Type    | Fibre Composition   | Weave | Mass g/m <sup>2</sup> |
|---------|---|-------|-----------------------|
| Type 1  | 100% cotton   | Twill | 260                   |
| Type 2  | 100% cotton   | Twill | 220                   |
| Type 1: | For use in areas of moderate temperatures (all areas of Kenya not listed under Type 2). |       |                       |
| Type 2: | For use in Coast Province, Kisumu, Garissa and the other hot areas of Kenya.            |       |                       |

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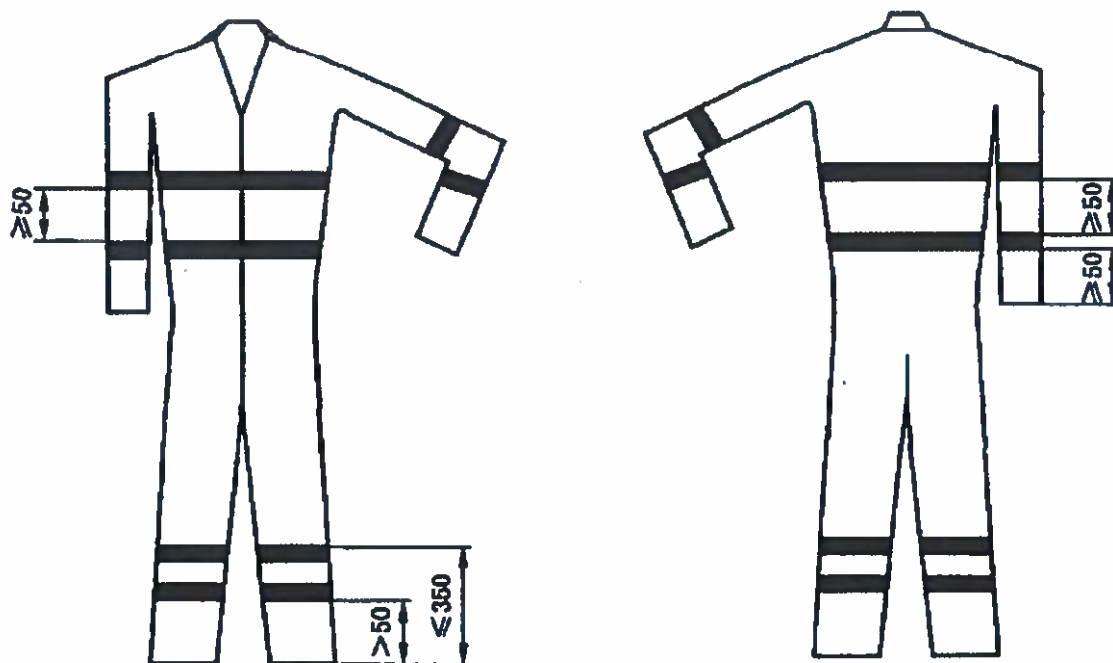
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**Table 3: Physical requirements for overall garment**

| Parameter   |                          | Requirement               | Test standard |
|---|--------------------------|---------------------------|---------------|
| Dimensional change (%)  |                          | ISO 5077                  | -0.8 / -2.3   |
| Anti-static properties  | Half period of discharge | EN 1149-5                 | < 0.01        |
|   | Shielding factor, S      | EN 1149-3                 | 0.8           |
| Tensile strength, min, N  |                          | 300                       | ISO 13934-1   |
| Tear strength, min, N   |                          | 15                        | ISO 13937-2   |
| Burst strength, min, kPa  |                          | 200                       | ISO 13938-1   |
| Seam strength, min, N   |                          | 225                       | ISO 13935-2   |
| Resistance to water and water vapour penetration                            |                          | Code letter W             | EN 343        |
| Resistance to convective heat   |                          | Performance level B1 - 5  | ISO 9151      |
| Resistant to radiant heat at a flux density of heat of 20 kW/m <sup>2</sup> |                          | Performance level C1 - 16 | ISO 6942      |
| Resistance to contact heat at a temperature of 250°C                        |                          | Performance level F1      | ISO 12127     |
| Protection against the thermal effects of an electric arc current           |                          | No effect                 | IEC 61482-1   |



**Fig. 2: Illustration of class 3 Ordinary overall with two bands retro-reflective material**

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Doc. No.

KP1/6C/13/TSP/01/025-1

Issue No.

2

Revision No.

0

Date of Issue

2015-08-06

Page 11 of 19

#### 4.4. Acid Protective Overall

##### 4.4.1. General

- 4.4.1.1. The acid protective overall shall be in accordance with all the requirements listed in clauses 4.2 of this specification.
- 4.4.1.2. The acid proof overall shall fully conform to the requirements of at least class 3 of BS EN 14325 and Table 4.
- 4.4.1.3. The overall shall be designed to be worn over every day clothes to protect the wearer from direct contact with acids (splash).
- 4.4.1.4. The overall shall guard against the effects of acids, which could enter the body through skin absorption or tissue damage upon contact with the skin. It shall protect the body, arms and legs of the wearer.
- 4.4.1.5. The acid proof overalls shall be CE-certified and classified as chemical-protection Types 3. They shall also be tested for anti-static properties under EN 1149-1.
- 4.4.1.6. The hood (if applicable), sleeves and cuffs of the trousers shall be fitted with elastic drawstrings keeping splashes out. The zip fastener shall run down the middle of the front side and shall be fitted with two cover strips held in place by tape.
- 4.4.1.7. The seams of the one-piece overalls shall also be impermeable to liquids and shall provide protection against ultra-fine dusts and powders, with an effective barrier to many inorganic acids and alkalis as well as water-based salt solutions.

##### 4.4.2. Material

- 4.4.2.1. The material used to manufacture the acid proof overall shall be 65% polyester and 35% cotton high quality fabric with polyurethane coating.
- 4.4.2.2. The acid protective overall shall be made from material of minimum physical characteristics given in Table 4.

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- 4.4.2.3. The materials of construction shall not cause skin irritation or have any adverse effect to health of the wearer. The material shall have a crease recovery angle of at least 120°.



**Table 4: Test methods for overall fabric as specified in BS EN 14325 and KS 541:1**

| <b>Material</b>                            |                                    |                        |                     |
|--|------------------------------------|------------------------|---------------------|
| <b>Physical characteristics</b>            | <b>KPLC Requirement</b>            | <b>Unit of measure</b> | <b>Test Method</b>  |
| Fiber composition                          | Polyester, %                       | 65 ± 5                 | KS 08-127           |
|  | Cellulose, %                       | 35 ± 5                 |                     |
| Breaking strength                          | Warp way, N, min                   | 920                    | KS 08-119           |
|  | Weft way, N, min                   | 800                    |                     |
| Threads per cm,                            | Warp way, min                      | 18                     | KS 08-121           |
|  | Weft way, min                      | 17                     |                     |
| Mass per unit area, g/m <sup>2</sup> , min |                                    | 220                    | KS 08-120           |
| Weave                                      | Plain                              |                        | KS 08-212           |
| Abrasion resistance                        | >500                               | cycles                 | EN 530 method 2     |
| Flex resistance                            | >5,000                             | cycles                 | ISO 7354 method B   |
| Tear resistance (trapezoidal)              | >40                                | N                      | EN ISO 9073-4       |
| Tear strength                              | >100                               | N                      | EN ISO 13934-1      |
| Puncture resistance                        | >50                                | N                      | EN 863              |
| Resistance to penetration by liquids       | >60                                | min                    | EN ISO 6529         |
| Resistance to ignition                     | Must not continue to burn after 5s | Pass/fail              | EN 13274-4 method 4 |
| <b>Seams – Joins - Assemblages</b>         |                                    |                        |                     |
| Resistance to liquid permeation            | >60                                | min                    | EN ISO 6529         |
| Seam strength                              | >75                                | N                      | EN ISO 13935-2      |
| Resistance to penetration by liquids       | Whole suit EN 463 type 3           |                        | EN 463              |

#### 4.5. QUALITY MANAGEMENT SYSTEM

- 4.5.1. The supplier shall submit a quality assurance plan (QAP) that will be used to ensure that the requirements for protection, ergonomic characteristics, innocuousness, mechanical properties, marking of the overalls, will fulfill the requirements stated in the contract documents, standards, specifications and regulations.

- 4.5.2. The Manufacturer's Declaration of Conformity to applicable standards and copies of quality management certifications shall be submitted with the tender for evaluation.

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KP1/6C/13/TSP/01/025-1

Issue No.

2

Revision No.

0

Date of Issue

2015-08-06

Page 13 of 19

## 5. TESTS AND INSPECTION

- 5.1. The overalls shall be inspected and tested in accordance with all the standards in clause 2.0, Tables 3 & 4 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 conformity to clause 4 for the overalls 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 overalls to be supplied under the contract shall be submitted to The Kenya Power & Lighting Company for approval before shipment/delivery.
- 5.4. The overalls shall be subjected to acceptance tests in accordance with all the standards in clause 2.0, Tables 3 & 4 and the specification requirements at the manufacturer's workshop before dispatch. Acceptance tests shall be witnessed by at least two (2) Tender Processing Committee members appointed by The Kenya Power and Lighting Company Limited (KPLC). Routine and Sample Test Reports for the overalls to be supplied shall be submitted to KPLC for approval before delivery of the goods.
- 5.5. On receipt of the overalls 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 without charge to KPLC, overalls which upon examination, test or use fail to meet any of the requirements in the specification

## 6. MARKING AND PACKING

### 6.1. Marking

- 6.1.1. Each item of overalls shall be marked with the following information in English Language, which shall be permanently attached to the garment and remain perfectly legible.
- (i) A means of identifying either the manufacturer or his authorized representative within the EC, for example trade mark.
  - (ii) The product's commercial name, style code or other means of identification.
  - (iii) The size designation.
  - (iv) A brief description of the level of protection offered.

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- (v) A warning that no item of clothing can offer full protection.
- (vi) Care instructions (care label symbols including negative symbols where appropriate).
- (vii) The standard of manufacture
- (viii) The letters, "**Property of Kenya Power**".

6.1.2. If the user information includes cleaning instructions the labelling shall be visually examined after it has been cleaned five times using the cleaning treatment recommended in those instructions. The labelling shall still be perfectly legible after these cleaning treatments.

## **6.2. Packing**

6.2.1. The packaging which immediately contains the clothing shall be marked with the information specified in 6.1.2 (i), (ii), (iii) and (iv), and shall indicate where the wearer information and instructions for use can be found.

6.2.2. The overalls shall be packed in a clean, sound and dry containers made of a material, which does not affect the product it protects from excessive loss of moisture and contamination.

## **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) Details of the manufacturer's experience;
- d) Copies of required test reports by a third party testing laboratory accredited to ISO/IEC 17025 and a copy of accreditation certificate to ISO/IEC 17025 for the third party testing laboratory;
- e) Manufacturers letter of authorization, QMS certificate and other technical documents required in the tender.
- f) Packaging details (including packaging materials).

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 overalls to be manufactured for KPLC.

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EQUIPMENT - PROTECTIVE  
CLOTHING**

**Part 1: Overalls**

**Doc. No.**

**KP1/6C/13/TSP/01/025-1**

**Issue No.**

**2**

**Revision No.**

**0**

**Date of Issue**

**2015-08-06**

Page 15 of 19

- 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 overalls;
- 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 overalls 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 overalls to KPLC store. Instructions shall be precise, comprehensible and in English language. They shall contain at least the following information:

- a) the information required in Clause 7;
- b) the full address of the manufacturer or his authorized representative;
- c) a statement of the intended use of overalls;
- d) an explanation of the protection provided under this standard and details of the extent of protective material and zones of specific impact protection provided;
- e) advice about wearing other PPE to obtain the protection desired, for example, shin protection can be provided by impact protectors fitted into trousers;
- f) a warning about the limits of protection provided by overalls;
- g) a warning about any environmental conditions or misuse that would seriously reduce the protection provided;
- h) instructions on how to clean and care for overalls;
- i) instructions on how to examine overalls for signs of wear and degradation;
- j) the suggested lifetime of overalls; instructions on actions to be taken when wear or damage is apparent to identify overalls which are no longer suitable to use;

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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 | Description   | Guaranteed Technical Particulars offered  |
|--------|---|---|
| 1      | <b>Ordinary Overalls</b>  |   |
|        | Name of Manufacturer & Country of manufacture of the assembly tools being offered | specify   |
|        | Type/Model Reference Number   | specify   |
|        | Standard of manufacture   |   |
|        | Compliance to clauses 4.2.1 to 4.2.4  |   |
|        | Material properties   | Emission of nickel per week   |
|        |   | pH value  |
|        |   | Colour fastness   |
|        |   | Release of carcinogenic amines  |
|        | Compliance to clauses 4.2.6 to 4.2.7  | Prove compliance – Attach type test.  |
|        | Size designation as per Table 1.  | Prove compliance – Attach type test.  |
|        | Manufacture   | Seams   |
|        |   | Visible seams type  |
|        |   | Hidden seams type   |
|        |   | Minimum seam allowance  |
|        |   | Stitches  |
|        |   | Stitching type  |
|        |   | No of stitches per cm   |
|        |   | Colour of overall   |
|        |   | Sleeve design and dimensions  |
|        |   | Legs design and dimensions  |
|        | Finish  | Collar design and dimensions  |
|        |   | Pockets design and dimensions   |
|        |   | Markings  |
|        |   | KPLC logo   |
|        |   | Word KPLC   |
|        | Design and constructions  | Shall have a permanent heat and flame retardant properties conforming to ISO 11612  |
|        |   | Anti-static resistance property conforming to BS EN 1149-3.   |
|        |   | shall have large pleats in the back   |
|        |   | high visibility retro reflective material shall be fluorescent Yellow – Green and shall be of class 3 conforming to the requirements of ISO 20471 |
|        | Reflective material   | Band design   |
|        |   | Colour  |
|        |   | Visibility distance, m  |

|  |   |
|--|---|
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## SPECIFICATION FOR PERSONAL PROTECTIVE EQUIPMENT - PROTECTIVE CLOTHING

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KP1/6C/13/TSP/01/025-1

2

0

2015-08-06

Page 17 of 19

2

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| Clause   | Description   |   |                               |           | Guaranteed Technical Particulars offered |
|--|---|---|-------------------------------|-----------|--|
|  |   |   | Sleeve design and dimensions  |           |  |
|  |   |   | Legs design and dimensions    |           |  |
|  |   |   | Collar design and dimensions  |           |  |
|  |   |   | Pockets design and dimensions |           |  |
|  |   |   | Markings                      | KPLC logo |  |
|  |   |   |                               | Word KPLC |  |
|  | General requirements  | Conform to at least class 3 of BS EN 14325 and Table 4                              |                               |           | Prove compliance – Attach type test.     |
|  |   | Shall guard against the effects of acids  |                               |           |  |
|  |   | CE-certified and classified as chemical-protection Types 3                          |                               |           |  |
|  |   | Tested for anti-static properties under EN 1149-1.                                  |                               |           |  |
|  | Acid material physical properties                             | Shall be 65% polyester and 35% cotton high quality fabric with polyurethane coating |                               |           |  |
|  |   | Fiber composition   | Polyester, %                  |           |  |
|  |   |   | Cellulose, %                  |           |  |
|  |   | Breaking strength   | Warp way, N, min              |           |  |
|  |   |   | Weft way, N, min              |           |  |
|  |   | Threads per cm,   | Warp way, min                 |           |  |
|  |   |   | Weft way, min                 |           |  |
|  |   | Mass per unit area, g/m <sup>2</sup> , min  |                               |           |  |
|  |   | Weave   |                               |           |  |
|  |   | Abrasion resistance   |                               |           |  |
|  |   | Flex resistance   |                               |           |  |
|  |   | Tear resistance (trapezoidal  |                               |           |  |
|  |   | Tear strength   |                               |           |  |
|  |   | Puncture resistance   |                               |           |  |
|  |   | Resistance to penetration by liquids  |                               |           |  |
|  |   | Resistance to ignition  |                               |           |  |
| Shall not cause skin irritation or have any adverse effect to health of the wearer |   |   |                               |           |  |
| Shall have a crease recovery angle of at least 120°.                               |   |   |                               |           |  |
| Seams – Joins - Assemblages  | Resistance to liquid permeation                               |   |                               |           |  |
|  | Seam strength   |   |                               |           |  |
|  | Resistance to penetration by liquids                          |   |                               |           |  |
| 4.5.   | 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 overalls.                             |   |                               |           | specify                                  |
| 6.1  | Marking   |   |                               |           | specify                                  |
| 6.2  | Packing   |   |                               |           | specify                                  |

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Kenya Power

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Page 19 of 19

| 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                                  |

.....  
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.*

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