Specification for spun yarns

Part 3: Polyester/cellulosic blended yarns

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Kenya Association of Manufacturers (KAM)

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Specification for spun yarns

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Part 3: Polyester/cellulosic blended yarns

Foreword

This Kenya Standard has been prepared by the Technical Committee on Yarns and Fibres under guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

Yarn quality affects not only the efficiency of fabric production but also the fabric quality. Yarn quality specification will therefore be of utmost importance and interest to the spinner, weaver, knitter and yarn merchant. This Part 3 of this Kenya Standard has been developed with these interests in mind.

Yarns are produced in a wide range of counts (linear densities) of varying fibre blend compositions and proportions for various end-uses. This Kenya Standard takes into consideration all these variations and specifies only the minimum requirements for essential quality characteristics of yarns.

This Second edition cancels and replaces the First edition (KS 1113-3:1993) which has been technically revised. The changes are as follows.

-Test methods in clauses 5.1, 5.4, 5.6, 5.7 and 5.9 have been updated

-Formular for coefficient of variation of linear density has been added

-Clause 7 on sampling have been added

-Method of determination of moisture regain have been added in annex A

During the preparation of this standard, reference was made to the following document:

KS 1113-3:1993 Specification for staple spun yarns Part 3. Polyester/cellulosic blended yarns

Acknowledgment is hereby made for assistance received from these sources.

**Specification for spun yarns — Part 3. Polyester/cellulosic blended yarns**

# 1 Scope

This Part 3 of this Kenya Standard specifies the requirements, test methods and sampling methods for polyester/cellulosic blended yarns.

# 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

## KS ISO 139, *Textiles — Standard atmospheres for conditioning and testing*

ISO 1833-11, *Textiles — Quantitative chemical analysis — Part 11: Mixtures of certain cellulose fibres with certain other fibres (method using sulfuric acid)*

KS ISO 2060, *Textiles — Yarn from packages — Determination of linear density (mass per unit length) by the skein method*

KS ISO 2061, *Textiles — Determination of twist in yarns — Direct counting method*

KS ISO 6741-1*, Textiles — Fibres and yarns — Determination of commercial mass of consignments — Part 1: Mass determination and calculations.*

KS ISO 2062, *Textiles — Yarns from packages — Determination of single-end breaking force and elongation at break using constant rate of extension (CRE) tester*

KS ISO 16549, *Textiles — Unevenness of textile strands — Capacitance method*

# 3 Application

This Part 3 of this Kenya Standard applies to singles-spun grey polyester/cellulosic blended yarns, except singles-spun slub yarns.

# 4 Terms and definitions

For the purposes of this Part 3 of KS 1113, the following definitions together with those given in KS 1113: Part 1, shall apply:

**4.1** **cellulosic fibre** — Cellulosic fibre shall refer to cotton fibre or viscose fibre or polynosic fibre or any other regenerated fibre derived from cellulose.

**4.2** **regenerated fibre** — A fibre formed from a solution of natural polymer or a chemical derivative of a natural polymer and having the same chemical constitution as the natural polymer from which the solution or derivative was made.

**4.3** **blend**

An intimately and thoroughly intermixed fibres in predetermined proportions.

# 5 Requirements

## 5.1 Fibre Composition and Proportion

The fibre composition and proportion of the yarn shall be as declared subject to a tolerance of ± 5 per cent. This shall be determined in accordance with KS ISO 1833-11.

## 5.2 Linear density

The nominal linear density of the yearn shall be as declared subject to a tolerance of ± 3 per cent. This shall be determined in accordance with KS ISO 2060

## 5.3 Coefficient of variation of linear density

The coefficient of variation of the linear density of the yarn shall not exceed 2 %. The coefficient of variation (C.V.) of the yarns shall be determined using the following formula:

C.V. =

where



where

*x* is the linear density in tex of any yarn sample;

 is the mean linear density in tex of all the yarn samples;

 is the total number of samples; and

 is the standard deviation in tex.

## 5.4 Yarn twist

The turns per metre (or centimetre) in the yarn shall be as declared subject to a tolerance of ± 5 per cent. This shall be determined in accordance with KS ISO 2061.

## 5.5 Elongation at the breaking force

The minimum elongation at breaking force shall be 5 per cent. This shall be determined in accordance with KS ISO 2062.

## 5.6 Breaking tenacity

The minimum breaking tenacity of the yarn shall be as specified in Table 1. The breaking tenacity of the yarn shall be determined in accordance with KS ISO 2062.

## 5.7 Yarn unevenness (irregularity)

The yarn unevenness in terms of coefficient of variation (per cent c.v.) shall be determined in accordance with KS ISO 16549.

**5.7.1** **Unevenness of Ring Spun Yarns** — The coefficient of variation (irregularity) of the ring spun yarns shall not exceed those specified in Table 2.

**5.7.2** **Unevenness of Rotor Spun Yarns**-The coefficient of variation (irregularity) of the rotor spun yarns shall not exceed those specified in Table 3.

## 5.8 Moisture regain

The moisture regain of the yarn shall not exceed 5 per cent. This shall be determined in accordance with Annex A

## 5.9 Package mass

The mass of the package, conditioned as per KS ISO 139, shall be as declared subject to a tolerance of – 2 per cent.

**Table 1. Requirements for Breaking Tenacity**

|  |  |  |  |
| --- | --- | --- | --- |
| S/N | YARN BLEND AND USE | MINIMUM BREAKING TENACITY, CN/tex | Test Method |
| (i) | Ring spun polyester/cotton yarn for weaving | 18 | KS ISO 2062 |
| (ii) | Ring spun polyester/viscose/polynosic yarn for weaving | 24 |
| (iii) | Ring spun polyester/cotton yarn for knitting | 16 |
| (iv) | Ring spun polyester/viscose/polynosic yarn for knitting | 20 |
| (v) | Rotor spun polyester/cotton yarn for weaving | 15 |
| (vi) | Rotor spun polyester/viscose/polynosic yarn for weaving | 18 |
| (vii) | Rotor spun polyester/cotton yarn for knitting | 13 |
| (viii) | Rotor spun polyester/viscose/polynosic yarn for knitting | 15 |

**Table 2. Requirements for Unevenness of Ring Spun Yarns**

|  |  |  |  |
| --- | --- | --- | --- |
| S/N | LINEAR DENSITY, tex | % C.V. max. | Test Method |
|  | 45-25 | 10 | KS ISO 16549 |
|  | 24-20 | 11 |
|  | 19-16 | 11.5 |
|  | 15-13 | 12.5 |
|  | 12-11 | 13 |
|  | 10-9 | 13.5 |
|  | 8-7.2 | 14.0 |
|  | 7-6.4 | 14.5 |
|  | 6.3-5.9 | 15.0 |
|  | Finer than 5.9 | 15.5 |

**Table 3. Requirements for Unevenness of Rotor Spun Yarns**

|  |  |  |  |
| --- | --- | --- | --- |
| S/N | LINEAR DENSITY, tex | % C.V. max. | Test Method |
|  | Coarser than 60 | 12.0 | KS IS0 16549 |
|  | 60-35 | 12.5 |
|  | 35-25 | 13.0 |
|  | 24-20 | 13.5 |
|  | 19-16 | 14.0 |
|  | 15-12 | 15.0 |

# 6 Wrapping and packing

Yarn package(s) shall be wrapped in suitable wrappers or packed in suitable containers to protect them from damage while being handled or while in transit or in storage.

# 7 Marking

**7.1 Unit packages**

Each unit package shall have a label bearing the following information:

1. manufacturer’s name and address or registered trade mark;
2. linear density in tex;
3. spinning method used, e.g. ring spun or rotor spun;
4. name of material, i.e. 100 % polyester/cellulose yarn;
5. package net mass in kilograms;
6. yarn twist in t.p.m or t.p.cm;
7. lot/batch number.
8. Fibre composition and proportion;
9. Whether waxed or not waxed (rotor spun yarns);
10. Country of origin
11. Recommended end-use.

**7.2 Bulk containers**

Each unit package shall have a label bearing the following information

1. manufacture’s name and address or registered trade mark;
2. name of material, i.e. 100 % polyester/cellulose yarn;
3. linear density in tex;
4. quantity of pieces;
5. spinning method used, e.g. ring spun or rotor spun;
6. gross mass of the container;
7. lot/batch number; and
8. The counry of origin

# 8 Sampling

**8.1 Lot**

8.1.1 The quantity of polyester/cellulose spun yarns of the same variety delivered to a buyer against a dispatch note shall constitute the lot.

8.1.2 The conformity of the lot to the requirements of this standard shall be determined based on the tests carried out on the samples selected from the lot.

8.1.3 Unless otherwise agreed to between the buyer and the seller, the number of packs to be selected at random from a lot shall be as follows:

|  |  |  |
| --- | --- | --- |
| **SN** | **Number of Packs in the Lot** | **Number of Packs to be Selected** |
|  | Upto 15 | 5 |
|  | 16-30 | 7 |
|  | 31-50 | 10 |
|  | 51-100 | 15 |
|  | 101-300 | 25 |
|  | 301 and above | 30 |

8.1.4 **Acceptance criteria-** Acceptance shall be based on conformity of the lot to the requirements of this standard.

**ANNEX A**

**(Normative)**

**Determination of Moisture Regain**

**A.1 Principe**

A known mass of yarns is dried and then the loss in mass expressed as a ratio of the dry mass.

**A.2 Apparatus**

**A.2.1 Weighing balance,** Capable of weighing to an accuracy of 0.001 g.

**A.2.2 Drying Oven**, well ventilated with a temperature of 102 °C to 105 °C

**A.2.3 Desiccator,** waterproof when sealed, will be used for transfer of analysed material and during weighing.

**A.3 Procedure**

**A.3.1** From the sample under test draw at least three test specimens each weighing approximately 5 g.

**A.3.2** Take a test specimen drawn as in A.3.1 and weigh it accurately *(M1)*

**A.3.3** Dry it at a temperature of 102°C to 105°C until constant mass is obtained (see note)

**A.3.4** Cool the test specimen in a desiccator and determine the oven-dry mass *(M2*).

NOTE The mass is usually regarded as constant if the loss between two successive weighing, taken at an interval of 30 min does not exceed 0.1 per cent of the first of the two values.

**A.3.5** Similarly test the other test specimen(s).

**A.4 Calculation**

Moisture regain = 

**A.5 Report**

Report the average of the value calculated in A.4 as the moisture regain in %.