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Textiles — Polyester blended yarn — Specification

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Foreword

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Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

The committee responsible for this document is Technical Committee UNBS/TC 7, Textiles, Paper and Leather Products, Subcommittee SC 1, Textiles and related products.

Textiles — Polyester blended yarn — Specification

1 Scope

This Draft Uganda standard specifies requirements of grey yarn (single and doubled) spun from a blend of polyester with cotton or viscose fibre.

2 Normative references

The following referenced 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.

ISO 2, *Textiles — Designation of the direction of twist in yarns and related products*

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

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

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

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

ISO 6939, *Textiles — Yarns from packages —Method of test for breaking strength of yarn by the skein method*

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

ISO 17202, *Textiles — Determination of twist in single spun yarns — Untwist/retwist method*

ASTM D2255, *Standard test method for grading spun yarns for appearance*

ASTM D5647, *Standard guide for measuring hairiness of yarns by the photo-electric apparatus*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
cotton count (Ne)
number of hanks (each measuring 768 m or 840 yd) in 453.6 g (or 1 lb)

3.2
count lea strength product (CSP)
product of the lea breaking load in pounds and cotton count

3.3
grey cotton yarn
yarn as it leaves the spinning frame without any bleaching, dyeing or finishing treatment

Note 1 to entry: The yarn may be waxed or unwaxed

3.4
hairiness index
total length of protruding fibres in the yarn in cm with reference to the sensing length of 1 cm yarn

3.5
lea
continuous length of yarn measuring 109.73 m (120 yd) in the form of a coil having 80 wraps wound on a reel of 1.37 m (1.5 yd) girth

3.6
breaking load
maximum load (or force) applied to a specimen in a tensile test carried to rupture

3.7
single yarn tenacity
tensile stress of a single strand at rupture expressed as force per unit linear density of the unstrained specimen expressed usually as cN/tex (gf/tex).

3.8
tex
number of grams per kilometre of yarn

3.9
ring spun yarn
yarn spun on a system employing flat top cards and roller drafting assemblies with or without aprons on drawing, roving and ring frames

3.10
rotor spun yarn
yarn spun on an open-end spinning machine wherein the individualization and assembling of fibres are done and the real twist is effected by a rotor

3.11
doubled yarn
yarn in which two or more single yarns are twisted together in one or two operations.

4 Classification

The ring spun polyester blended yarn shall be classified as below:

a) PB 45 The polyester content in the blended yarn between 40 to 55 percent.

b) PB 65 The polyester content in the blended yarn between 55 to 70 percent.

c) PB 80 The polyester content in the blended yarn above 70 percent

5 Requirements

4.1 General

4.1.1 Blend composition

The blend composition of polyester with cotton or viscose fibre shall be as agreed to between the purchaser and the manufacturer. However, a tolerance of ± 3 on blend percentage of the major fibre component shall be permissible (see also US 426).

4.1.2 Yarn Count

4.1.1.1 The average resultant count of yarn shall be as agreed upon between the purchaser and manufacturer.

4.1.1.2 The coefficient of variation of yarn count shall not exceed 3.5 percent

4.1.1.4 Yarn count shall be determined in accordance with US ISO 2060.

4.1.2 Yarn twist

4.1.2.1 The number of turns per unit length shall be determined in accordance with ISO 2061 or ISO 17202. The direction for twist shall be indicated by the capital letter “S” or “Z” as specified in ISO 2.

4.1.2.2 The average twist shall be within ± 10 percent and ± 5 percent of the specified value for single spun yarn and doubled yarn respectively

4.1.3 Moisture regain

Unless otherwise agreed to between the purchaser and manufacturer, the moisture regain shall not exceed 8.5 percent when determined in accordance with ISO 6741-1.

4.1.4 Yarn appearance

When determined in accordance with ASTM D2255, the average black board appearance (5 boards) shall be at least of Grade D. In case of yarn counts coarser than 98 tex (6s), this shall be as agreed to between the purchaser and the manufacturer.

4.1.5 Freedom from defects

The yarn on cones/cheeses shall be free from the following defects:

a) stitches of more than 2.5 cm in length at the base;

b) excessive stitches at the nose;

c) soft cones or cheeses;

d) prominent stains inclusive of chalk and other markings;

e) cut threads;

f) absence of tail end where it is required and the length of the tail-end should not be less than 30 cm;

g) entanglement;

h) presence of hard waste;

i) ribbon formation;

j) drum cuts;

k) count mix up.

4.2 Ring spun single yarn

4.2.1 The ring spun single grey yarn shall comply with the requirements given in Table 1.

4.2.2 When determined in accordance with ISO 6939, the coefficient of variation of lea breaking load shall not exceed 10.0 percent

Table 1 — Performance requirements of ring spun polyester blended yarn

Parameter		Requirement					Test Method
		≥ 25 tex (≤ 24s)	16 – 25 tex (24s – 36s)	12 – 16 tex (36s – 50s)	8 – 12 tex (50s – 75s)	8 tex (75s) and finer	
CSP for polyester/Cotton blends, Min.	PB 45	2 300	2 300	2 200	2 100	2 000	Annex A
	PB 65	2 500	2 500	2 400	2 300	2 100	
	PB 80	-	-	-	-	2 200	
CSP for polyester/Viscose blends, Min.	PB 45	2 500	2 500	2 400	2 300	2 200	
	PB 65	2 650	2 650	2 550	2 450	2 250	
	PB 80	-	-	-	-	2 300	
Unevenness, %, Max		14.5	14.5	15.5	16.0	18.0	ISO 16549
Imperfections/Km							ISO 16549
Thin		75	75	150	275	500	
Thick		200	200	225	250	300	
Neps		130	130	200	250	300	
Total		405	405	575	775	1 100	
NOTE The unevenness percentage (U %) and the imperfections per Km of the yarn on packages shall not exceed the values given in Table 2 when tested at a speed of 50 m/min and at sensitivity of -50%, +30% and +30% for thin places, thick places and neps respectively							

4.3 Rotor spun single yarn

The rotor spun single grey yarn shall comply with the requirements given in Table 2.

Table 2 — Performance requirements of rotor spun polyester blended yarn

Parameter	Requirement				Test Method
	Polyester viscose (48%/52%)		Polyester cotton (67%/33%)		
	15s	20s	15s	20s	
Rkm, g/tex, min.	10.5	14.0	17.0	22.0	

Unevenness (U%)	10.5	11.5	11.0	11.5	ISO 16549
Imperfections/Km					ISO 16549
Thin	6	14	8	21	
Thick	24	31	26	44	
Neps	41	59	41	69	
Total	71	104	75	134	
NOTE The unevenness percentage (U %) and the imperfections per Km of the yarn on packages shall not exceed the values given in Table 2 when tested at a speed of 400 m/min and at sensitivity of -50%, +50% and +200% for thin places, thick places and neps respectively					

4.4 Doubled yarn

4.4.1 The single yarn used for producing doubled yarn shall satisfy the requirements specified in 4.1 and either 4.2 or 4.3.

4.4.2 The count lea strength product (CSP) of doubled yarn shall not be less than the value calculated by the following relationship:

$$CSP\ of\ doubled\ yarn = 1.10 \times CSP\ of\ corresponding\ single\ fold\ yarn\ given\ in\ either\ Table\ 1\ or\ Table\ 2$$

4.4.3 The coefficient of variation of the lea count shall not exceed 2.0 percent

4.4.4 The coefficient of variation of the lea breaking load shall not exceed 7.0 percent.

5 Labelling

5.1 Each cone or cheese of yarn shall be marked with the following:

a) blend composition;

b) count of yarn in ‘Ne’ or ‘tex;’

c) lot number;

d) manufacturer’s name, trademark or other means of identification;

e) spinning method used, e.g. ring or rotor;

f) individual package size/mass;

g) end use of yarn, e.g. weaving or knitting;

h) whether waxed or unwaxed;

i) packaging and storage conditions.

5.2 Each case containing cones or cheeses shall be marked with the following:

a) blend composition;

b) count of yarn in ‘Ne’ or ‘tex;’

c) lot number;

d) manufacturer's name, trademark or other means of identification;

e) gross mass of bale or case;

f) net mass of bale or case;

g) packaging and storage conditions; and

h) country of origin

6 Packaging

Cones or cheeses of yarn shall be packaged in suitable packaging materials which shall protect the product from damage during transportation, handling and storage. Cones or cheeses shall be packaged in unit packages and thereafter into bulk cases.

7 Sampling

7.1 In any consignment, the cases containing yarn of the same type and of the same nominal count shall constitute a lot.

7.2 Samples shall be drawn from each lot to determine its conformance with the requirements of the standard.

7.3 Unless otherwise agreed to between the buyer and the seller, the number of cases to be selected from a lot shall be in accordance with Table 3. The bales or cases shall be selected at random.

7.4 In case two or less cases are selected in the sample, at least 10 cones or cheeses shall be drawn at random from each of the selected case. However, in case three or more cases are selected in the sample, at least five cones or cheeses shall be drawn at random from each of the selected case.

Table 3 — Sampling

Lot Size	Sample Size
Up to 3	1
4 – 10	2
11 – 30	3
31 – 50	5
Over 50	8

Annex A

(normative)
Calculation of count strength product (CSP)

CSP is obtained by the following relationship:

$$CSP = Breaking\ load\ of\ a\ lea\ in\ Kg \times 2.2046 \times cotton\ count\ (Ne)$$

Where;

The breaking load is determined in accordance with ISO 6939

Cotton count (Ne) is determined in accordance with US ISO 2060

Bibliography

[1] IS 171:1993, *Textiles — Ring spun grey cotton yarn for weaving — Specification*

[2] IS 13683:2006, Textiles — *Ring spun grey cotton yarn — Specification*

[3] IS 13684:2006, Textiles — *Rotor spun grey cotton yarn — Specification*

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