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TANZANIA STANDARD

Textiles — Continuous Multifilament Polypropylene Yarns — Specifications

Draft Standards for Public Comments

TANZANIA BUREAU OF STANDARDS

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Foreword

This Draft Tanzania Standard was published under the authority of the Board of Director of Tanzania Bureau of Standards.

Tanzania Bureau of Standards (TBS) is the statutory national standards body for Tanzania established by the Standards Act Cap. 130.

Tanzania Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. The Technical Committees work under the supervision of Divisional (sectoral) Committees. The Standards are developed in accordance with the Guide and Procedure for Development of Tanzania Standards and TZS 0, *Guide for presentation of Tanzania Standards*.

Tanzania Standards are subject to review, to keep pace with science and technological advances. Users of the Tanzania Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

This Tanzania Standard was developed under the supervision of Textile Divisional Standards Committee (TDC). The Technical Committee responsible for the standard is *TDC 8– Yarns and Twines)*

The reporting of the results of a test or analysis made in accordance with this Tanzania Standard, if the final value, observed or calculated is to be rounded off, shall be done in accordance with TZS 4.

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Textiles — Continuous Multifilament Polypropylene Yarns — Specifications

1 Scope

1.1 This Draft Tanzania Standard specifies requirements for all types of polypropylene continuous single multifilament yarns for various end usages. This standard covers the requirements for both dyed and undyed polypropylene continuous filament yarns

1.2 This Draft Tanzania Standard covers the requirements for flat, twisted and intermingled polypropylene single multifilament yarns.

2 Normative references

For the purpose of this Tanzania Standard, the following references shall apply:

TZS 3: *Atmospheric conditions for testing*

TZS 4: *Rounding off numerical values*

TZS 262: *Textiles — Yarn from packages — Determination of linear density (mass per unit length) — Skein method)*

TZS 263: Textiles — Universal system for designating linear density (Tex system)

TZS 264: Textiles — Designation of the direction of twist in yarns and related products

TZS 265 (Part 1):, Textiles method of testing the strength of yarns from packages — Part 1 — Determination of breaking strength and extension

TZS 266: Textiles — Methods of testing the strength of twist in yarns

ISO 2060: Textiles — method for the determination of the linear density of all types of yarn

ISO 2062:, Textiles —method for determining the single-end breaking force and elongation at break of textile yarns
ISO 2061:, Textiles — Methods for Determination of twist in yarns

ISO 18066: Textiles — Methods for Determination of shrinkage in boiling water

ISO 18067: Textiles —methods for testing how much synthetic filament yarns shrink in dry-hot air

ISO 16549: Textiles—Methods for determining the unevenness of linear density along the length of textile strands

ISO 6741-1: Textiles —Methods for mass determination and calculations to find the commercial mass of homogeneous consignments of single-generic-species textile fibres and yarns

ISO 17881-2:, Textiles — Method for determining some phosphorous flame retardants in textiles

ISO 105-B10: Textiles — Method for colour Fastness-Artificial weathering.

ISO 105-J03: Textiles —Method for colour fastness

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ISO 105-B02: Textile —Method for determination of coloured textiles and colorants

ISO 14184-1: Textile — Method for determining the amount of free and hydrolysed formaldehyde in textile samples of any form.

ISO 22517: Textile —Method for determining 24 kinds of pesticide residues in all types of leather using gas chromatography-mass spectrometry (GC-MS).

ISO 14362-1: Textiles — Methods for determination of certain aromatic amines derived from azo colorants

ISO 2859-1: Sampling procedures for inspection

3 Terms and definitions

For the purpose of this Draft Tanzania Standard, the following terms and definitions shall apply:

3.1
fibre cross Section
the shape of a fibre when viewed perpendicular to its axis

NOTE — The shape of man-made fibres can be influenced by the spinning process and subsequent processing and treatments, such as texturizing.

3.2
flat Yarn
man-made continuous filaments that have not been twisted or textured.

3.3
intermingled Yarn
multifilament yarn in which cohesion is imparted to the constituent filaments usually by passing the yarn through a turbulent air without causing entwining of the filaments and the formation of randomly distributed interlacing points (knots).

NOTE — The knots are not actually the knots tied when two threads are broken but they are the tangle knots created by opening up of filaments and mingling under the influence of air pressure. This creates compact sections in the yarn imparting cohesiveness.

3.4
shrinkage
decrease in length of a test specimen caused by a specified treatment, expressed as a percentage of the length of the untreated test specimen. The lengths are measured before and during or after treatment under specified tensions.

3.5
boiling Water Shrinkage
decrease in length of a test specimen caused by a treatment in boiling water for specified time, expressed as a percentage of the length of the untreated test specimen. The lengths are measured before and after treatment under a specified pretension.

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3.6
hot Water Shrinkage
decrease in length of a test specimen caused by a treatment in hot water under as specified conditions of temperature and time, expressed as a percentage of the length of the untreated test specimen. The lengths are measured before and after treatment under a specified pretension. The water temperature to be applied is specified between buyer and seller.

3.7
Oven-dry mass
mass obtained by drying the filament yarn usually after removal of added products such as finish oil, moisture and extractable matters.

3.8
twisted Yarn
man-made continuous filaments yarn that has been formed by twisting together two or more filaments

4 Requirements

4.1 The Polypropylene filament yarn (PFY) shall conform to the requirements specified in **Table 1** and **Table 2** in addition to requirements specified in **4.2, 4.3, 4.4 and 4.5 (4.5 is optional)**

4.2 Freedom from Yarn Defects

The PFY shall be free from the following major defects:

4.2.1 Dirt/Grease

No soiling or grease spots shall be allowed. It is acceptable, if the spots can be cleaned off. Air strip yarn to remove dirt on the outside surface, for dirt on the ends, clean with sprayer. If dirt does not come off, reject to off grade.

4.2.2 Wound-in Waste

None shall be allowed. Strip to correct or reject to rewind.

4.2.3 Damaged/Bumped

None shall be allowed. Strip to correct or reject to rewind.

4.2.4 Finish Oil Contamination

Dry or regular oil yarn shall not be contaminated with finish oil when viewed under a packing table UV light, unless very slight (not immediately visible). Strip to clean if possible. Otherwise reject to off-grade.

4.2.5 Broken Filaments

None shall be allowed.

4.2.6 Texture Colour/Appearance

No overly shiny or dull yarn shall be allowed.

4.2.7 Fluorescent Oil

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If applicable, the package shall have even coverage under UV light**.**

4.2.8 Crossed Ends

Nose end crosses can be allowed unless they appear matted or too numerous to count. Up to 25 mm crosses on the tail end shall be allowed or crosses < 6 mm from the tube shall be allowed.

4.2.9 Slubs/Loops/Kinks

None shall be allowed.

4.2.10 Proper Wind

No patterns or bands, no high or falling off edges and no excessive hard/soft packages shall be allowed**.**

4.2.11 Ridges/Grooves

No ridges or grooves greater than 3 mm high or deep shall be allowed.

4.2.12 Twist

For single ply yarns only, Z twist shall rotate clockwise when allowed to relax and S twist will rotate counter-clockwise**.**

4.2.13 Proper Ply

Count the number of ends if the yarn is two ply or more. Air strip the yarn to correct if possible. Also check the tail.

4.2.14 Latching

Plies that separate when winding off package shall not be allowed.

4.2.15 Tail

Only one tail package per layer shall be permitted. The minimum tail length shall be one wrap around the tube.

4.3 Commercial Mass

The commercial mass shall be obtained by adding mass corresponding to commercial allowance of 6.50 percent to the oven dry mass of the consignment when tested by the methods prescribed in ISO 6741 (Part 1) and it shall not be less than the declared commercial mass of the consignment.

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4.4 Identification of Polypropylene Yarns

The polypropylene filament yarns shall be identified by microscopic and dissolution test given in ISO 11357-3 and melting point of 160 °C, Min.

4.5 Additional Requirements for ECO-Mark (Optional)

For Eco-mark, the product shall also comply with the additional requirements as given in **ANNEX A.**

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Table 1 Physical Requirements for Polypropylene Fully Drawn Yarns

(Clauses 4.1)

S/N	Characteristic	Requirements Range	Requirements Tolerance	Method of Test
1.	Linear density (tex)	As declared	± 2.0 percent	ISO 2060/ TZS 262
2.	No. of filaments	As declared	± 1	Visual inspection under microscope
3.	Tenacity cN/tex ,(min)	6.1		ISO 2062/ TZS 265
4.	Elongation at break, percent, (min)	17		ISO 2062/ TZS 265
5.	Twist per metre, (as declared) (for twisted yarns only) ,(min)	50		ISO 2061
6.	Number of nips per meter, (for intermingled yarns only), (min)	10		ASTM D4724
7.	Boiling water shrinkage, percent (, Max)	3.0	-	ISO 18066
8.	Hot air shrinkage, percent Max	3.0	-	ISO 18067
9.	Unevenness of yarn (normal), percent, Max	2.0	-	ISO 16549/ TZS 4493

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Table 2 Chemical Requirements for Polypropylene Fully Drawn Yarn

(Clauses 4.1)

S/N	Characteristic	Requirements	Requirements Tolerance	Method of Test
1.	Spin finish oil pick-up, percent (min)	0.40		ASTM D2257
2.	Moisture regain, percent, Max	0.2	-	ISO 6741-1/ TZS 834-1
3.	Phosphorus content, percent, Min (for fire retardant yarn only)	0.65	-	ISO 17881-2
4.	Ultraviolet resistance, UV-B Lamp, 144 h, percent retained strength, Min (for UV resistant yarn only)	90	-	ISO 105-B10
5.	Colour strength with reference to standard yarn percent (for dope dyed yarns only) (see Note)	100	± 4	ISO 105
6.	Colour difference with reference to standard yarn, measured as ΔE, Max. (for dope dyed yarns only) (see Note)	1.0	-	ISO 105-J03
7.	Colour fastness to light (for dope dyed yarns only), Min	5	-	ISO 105-B02

NOTES

1 The manufacturer shall declare the L, a, and b values of the colour coordinates of the standard yarn.

2 Either of the requirements indicated at (v) and (vi) needs to be complied with

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5 PACKING

5.1 The continuous multfilament polypropylene yarn shall be wound over bobbins in any mass up to 15 kg of yarn per bobbin. All such packages shall be packed in pallets or cartons, properly strapped using polypropylene/PET straps. Packing materials should be roadworthy/airworthy/seaworthy as agreed to between the buyer and the seller.

5.2 All wooden pallets used for packing are to be heat treated. All wooden/paper packing should be free from infestation/fungal growth.

NOTE — Container fumigation for domestic supply shall be optional.

6 MARKING

6.1 Each individual bobbin containing multifilament polypropylene yarn shall be marked with indelible ink, the following information:

a) Name of the material;
b) Linear density
c) Manufacturer's name, address and trade-mark (if available);
d) Lot/batch/merge number;
e) Month and year of manufacture; and
f) Net Mass and length of the yarn

6.2 Each carton/pallet of multifilament polypropylene yarn shall be marked with indelible ink, the following information:

a) Name and description of the material;
b) Gross weight of each carton/Pallet;
c) Net weight of each carton/Pallet;
d) Manufacturer's name, address and trade-mark (if available);
e) Lot/batch/merge number;
f) Month and year of manufacture; and
g) Any other information required by the law in force.

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7. **Sampling**

Sampling shall be conducted in accordance with ISO 2859-1

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Annex A
(informative)

Additional Requirements for ECO-Mark (Optional)

S/N	Characteristic	Requirements	Method of Test
1.	Total free and releasable formaldehyde, mg/kg (ppm), Max	20	ISO 14184-1
2.	Extractable heavy metals by artificial acidic sweat/saliva, ppm, Max		ISO 105-E04
	a) Mercury	0.1	
	b) Chromium III	0.1	
	c) Chromium VI	Not detected	
	d) Lead	0.2	
	e) Cadmium	0.1	
	f) Copper	25	
	g) Antimony	30	
3.	Pentachlorophenol, ppm, Max	0.5	ISO 17070
4.	Pesticides (sum parameter), ppm, Max	1.0	ISO 22517
5.	Banned pesticides, ppm, Max	Not detected	ISO 22517
6.	Banned azo colourants (arylamines), ppm, Max (For dyed yarns only) (sum parameters)	20	ISO 14362-1

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[1] **IS 18892: 2024**- Textiles — Continuous Multifilament Polypropylene Yarns — Specification

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