



Draft TANZANIA STANDARD

DTZS 3956
First Edition

**Textile Floor Covering — Carpet Tiles Made of Synthetic Yarn —
Specification**

Draft for Stakeholders comments only!



Foreword

This Draft Tanzania Standard is being developed by the Household Textile Technical Committee under supervision of the Textile and Leather Division Standards Committee and it is in accordance with the procedures of the Bureau.

This Draft Tanzania Standard has been prepared with assistance drawn from:

IS 17479: 2023 Textile Floor Covering — Carpet Tiles Made of Synthetic Yarn — Specification

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1 Scope

1.1 This Draft Tanzania standard specifies sampling, the constructional particulars and performance requirements of tufted carpet tiles made of polypropylene, polyester or nylon filament yarn or blends of polypropylene and polyester filament yarn.

1.2 This Draft Tanzania Standard does not specify the general appearance, design and size of the carpet tile.

2 Normative References

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- a) *TZS 4 Rounding off numerical values.*
- b) *TZS 138 Textiles - Test for colour fastness to rubbing.*
- c) *TZS 23 Textiles - Tests for colour fastness - Part B02: Colour fastness to artificial light: Xenon arc fading lamp test*
- d) *ISO 1766 - Textile floor coverings — Determination of thickness of pile above the substrate*
- e) *TZS 4641 - Textile floor coverings - Burning behaviour - Tablet test at ambient temperature*
- f) *ISO 105-E01 - Textiles - Tests for colour fastness - Colour fastness to water*
- g) *ISO 2551 – Textile floor coverings and Textile floor coverings in Tufted form – Determination of*
- h) *ISO 4918 - Resilient, textile and laminate floor coverings — Castor chair test*
- i) *ISO 4919 - Carpets – Determination of Tuft withdrawal force*
- j) *ISO 8543 - Textile floor coverings — Methods for determination of mass*
- k) *ISO 10834 - Textile floor coverings — Non-destructive measurement of pile thickness above the backing — WRONZ gauge method*
- l) *ISO 11857:1999, Textile floor coverings — Determination of resistance to delamination*
- m) *ISO 13750 - Textile floor coverings — Determination of resistance to staining by acid food colours*
- n) *ISO 18168 – Textile floor coverings — Colour fastness to shampooing*
- o) *ISO 23122, Textile floor covering – Production of change in appearance by means of Hexapod tumbler Tester*
- p) *ISO 24341 - Resilient and textile floor coverings — Determination of length, width and straightness of sheet*

3 Terms and Definitions

3.1 Pile/Tuft

It is a part of a textile floor covering consisting of textile yarns or fibres, cut or looped, projecting from the substrate and acting as a use surface.

3.2 Carpet

a textile floor covering typically consisting of an upper layer of pile attached to a backing.

3.3 Carpet Tile

The carpet tile is a composite material composed of a textile use surface bonded to a tile backing which must have the basic important properties of dimensional stability, and the ability to lie flat on the floor without doming at the centre or the curling up of tile edges.

3.4 Pre-coat

The deposition or coating on the back of a textile floor covering to ensure its penetration into the support fabric and pile root without reaching the use-surface.

3.5 Primary Backing

The support fabric or base fabric material that acts as a carrier for the pile yarn and which is often additionally used as an anchor for other parts of the substrate.

3.6 Secondary Backing

Additional stabilizing or reinforcing layer attached to or adhered to the underside of the primary backing. It can be a textile, rubber, or elastomeric foam layer attached to or adhered to, flowed onto or coated onto the underside of the primary backing.

3.7 Tuft Withdrawal Force

The tuft withdrawal force is the measure of force required to withdraw a single tuft or loop of pile from a carpet. It measures the binding force between carpet pile and backing.

3.8 Delamination

The process of separation of the use-surface and/or primary backing of a textile floor covering from the secondary backing material.

4 General Requirements

4.1 Manufacture

4.1.1 Pile Yarn

The yarn used in manufacturing of pile or tufts of carpet tile shall be as following:

- a) *Type I* — Polypropylene or polyester (solution dyed/dope dyed) filament yarn or their blends shall be used as pile yarn
- b) *Type II* — Nylon (polyamide) (solution dyed/dope dyed) filament yarn shall be used as pile yarn.

NOTE 1 — The filament yarn used as pile yarn can be either yarn manufactured through bulk continuous filament (BCF) route or partially oriented yarn (POY) route or combination of both.

4.2 Primary Backing

Primary backing cloth used as a medium for tufting the pile yarn shall be synthetic woven or non-woven primary backing or backing woven with fleece or any other suitable backing cloth.

4.3 Topical Treatment

The topical treatment to increase anti-stain, anti-soil, anti-bacterial, anti-dour, anti-mosquito, anti-cockroach, anti-viral, water repellent, fire resistant, fragrance, anti-static etc. may be applied as per the agreement between the buyer and the seller.

4.4 Precoat

After tufting the carpet shall be coated with ethyl vinyl acetate or any other suitable synthetic coating as per the agreement between the buyer and the seller.

4.5 Secondary Backing

The secondary backing layer shall be combination of polyvinyl chloride (PVC) or polyolefin with fibre glass or the combination of either polyvinyl chloride (PVC) or polyolefin with fibre glass and felt backing or polyurethane cushion. (see Fig. 1)

The gram per square meter of polyvinyl chloride (PVC) used as backing material shall not be less than 2 000 g/m² for high low pile loop designs carpet tiles and 2 500 g/m² for multiple color designs.

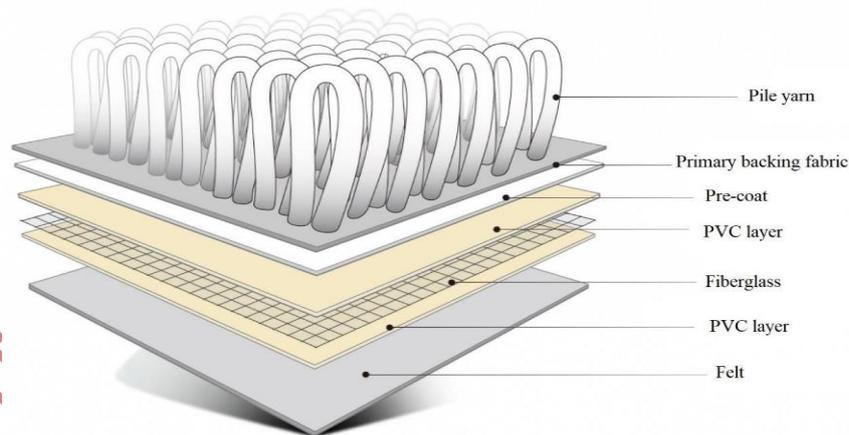


Fig. 1 Illustration of Carpet Tile made of synthetic yarn

5 Performance requirements

The carpet tile shall conform to the requirements as specified in Table 1.

Table 1- Performance Requirements for Carpet Tiles

SN	Characteristic	Requirement		Test Method
		Type I	Type II	
i)	Length and width, m	As agreed with a tolerance of ± 1 percent		ISO 24341
ii)	Pile thickness, mm, <i>Min</i>	2.5	2.5	ISO 10834 / ISO 1766 (incase of dispute for more accuracy)
iii)	Pile weight, g/m ² , <i>Min</i>	420	470	ISO 8543
iv)	Pile density, g/m ² /mm, <i>Min</i>	185	185	ISO 8543
v)	Colour fastness to rubbing (dry and wet), change in colour	4 or better	4 or better	TZS 138
vi)	Colour fastness to shampooing, change in colour	4 or better	4 or better	ISO 18168
vii)	Colour fastness to water			ISO 105 - E01
	a) Change in colour	4 or better	4 or better	
	b) Staining on cotton and silk fabric	4 or better	4 or better	
viii)	Colour fastness to light, change in colour	4 or better	4 or better	TZS 23
ix)	Delamination force, N/cm, <i>Min</i>			ISO 11857
	a) PVC backing	18	18	
	b) Foam backing	9	9	
x)	Tuft withdrawal force, N, <i>Min</i>			ISO 4919
	a) For cut pile	15	15	
	b) For loop pile	25	36	
xi)	Dimensional change due to effect of varied water and heat, percent, <i>Max</i>	± 0.1	± 0.1	ISO 2551
xii)	Dimensional change on exposure in environment chamber, <i>Max</i>	Curling ≤ 2 mm	Curling ≤ 2 mm	Annex A
xiii)	Change in appearance (Castor chair test), colour change after 25 000 cycles	2-3 or better	2-3 or better	ISO 4918
xiv)	Change in appearance (Hexapod method), colour change			ISO 23122
	a) After 4 000 cycles	3 or better	3 or better	
	b) After 12 000 cycles	2-3 or better	2-3 or better	
xv)	Stain resistance to red dye	≥ 7	≥ 6	ISO 13750
xvi)	Flammability	Melt portion < 2.54 cm for 7 specimens out of 8	Melt portion < 2.54 cm for 7 specimens out of 8	TZS 4641

5 Packing and Marking

5.1 Marking

A white paper sticker of appropriate size with the following information shall be securely attached or fixed on to sides of the carpet tile box:

- a) Name of the product;
- b) Manufacturer's name, initials or trade mark;
- c) Pile type, that is, nylon, polypropylene or polyester;
- d) Pile thickness in mm;
- e) Pile weight;
- f) Number of tiles;
- g) Length and width of tile in cm;
- h) Month and year of manufacture;
- i) Recyclability
- j) Batch /lot number; and

5.1 Packing

The carpet tile shall be packed securely so as to allow normal handling and transport without tearing and exposing the contents. The carpet tiles are placed in the box of appropriate dimension with pile side facing each other and back side facing each other. Details of the packing shall be as agreed to between the buyer and the seller.

6 Sampling and Criteria for Conformity

6.1 Lot

All the carpet having same dimensions, composition, pile gsm and pile thickness delivered to a buyer against a dispatch note shall constitute a lot.

6.2 The conformity of the lot to the various requirements specified in the standard shall be determined on the basis of tests carried out on the sample selected from the lot.

6.3 Unless otherwise agreed to between the buyer and the seller, the carpets to be selected at random shall be as given in Table 2.

6.3.1 For selection of samples at random from the lot conformity for determining conformity of the lot requirements specified in this Draft Tanzania Standard shall be as per table 2 and permissible number of non – conforming carpets shall be as per Table 3.

Table 2 Sample Size and Permissible Number of Non-conforming Carpets

Lot Size	Sample Size	Permissible Number of Non-Conforming Carpets	Sub-Sample Size
Up to 90	5	0	3

91 to 150	8	0	3
151 to 500	13	1	5
501 to 1200	20	1	5
1 201 to 10 000	32	2	8
10 001 to 35 000	50	3	8
35 001 to 500 000	80	5	13
500 001 and above	125	7	13

Table 2 Sample Size and criteria of conformity

Characteristic	Number of samples	Criteria for Conformity
Length, width, pile thickness	According to col 2 of Table 2	Number of non-conforming pieces shall not exceed the corresponding number given in column 3 of Table 2
Pile weight, pile density, color fastness, delamination force, tuft withdrawal force, dimensional change due to effect of varied water and heat, dimensional change on exposure in environment chamber, change in appearance (hexapod test), change in appearance (caster chair test), stain resistance to red dye	According to col 4 of Table 2	All the test pieces shall meet the requirement.
Flammability, exposure to fluorescent UV lamp		The test shall be carried out once in a year for the product.

ANNEX

Determination of dimensional changes on exposure in environmental chamber (Normative)

1 Objective

To determine dimensional changes due to the effects of varied condition in environmental chamber.

2 Principle

Operating principle is control of two parameters, that is, temperature and humidity in closed chamber.

3 Instrument and apparatus

3.1 Environmental Chamber — Temperature range: (- 35 °C to 85 °C) and relative humidity from 10 percent to 95 percent

3.2 Vernier Caliper

3.3 Personnel Protective Equipment

4 Conditioning

The test specimen shall be conditioned for at least 8 h.

5 Sample preparation

Test at least 4 carpet tiles.

6 Procedure

6.1 Measure the curling of the test sample before start.

6.2 Place the tiles backside down on the glass shelves.

6.3 Close the chamber door. Do not open the chamber while the test is running. This will void the test results.

6.4 Set chamber to reach 49 °C and 95 percent relative humidity and hold for 8 h.

6.5 In an hour, drop the conditions to 16 °C and 20 percent relative humidity and hold for 16 h.

6.6 Complete one cycle as described.

6.7 Measure all four corners for final curling. Do not lift tile before measurement.

7 Assessment

7.1 Any measurements of curling greater than 2 mm is a product failure.

7.2 Also measure the center of the tile from the glass surface to check for domed tile

7.3 If results fall out of specification, repeat the test again and reconfirm.

7.4 If results fail to meet specification, then reject the lot.

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